Fourth Special Report to the U.S. Congress on

Alcohol and Health

from the Secretary of Health and Human Services

January 1981

U.S. Department of Health and Human Services
Public Health Service
Alcohol, Drug Abuse, and Mental Health Administration

National Institute on Alcohol Abuse and Alcoholism

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Foreword

Alcoholism and problem drinking are among the most serious public health problems in the country today. In addition to their economic impact, they continue to have serious personal and social consequences. The need for national concern in alleviating the illness of our alcoholics and in helping problem drinkers is underscored by the magnitude of these consequences. Alcohol-related accidents result in tens of thousands of injuries and deaths. Physical, psychological, and social disruptions are experienced by large numbers of American teenagers as a result of destructive patterns of drinking. Thousands of children are born with abnormalities due to maternal drinking during pregnancy. Many children of alcoholic parents suffer psychological and behavioral disorders. In addition, problem drinking creates further difficulties for those population groups already suffering from years of neglect and discrimination.

This report to the Congress demonstrates the significant progress to control and treat alcoholism and alcohol abuse that has been made through the Department of Health and Human Services' emphasis on alcohol-related problems. It provides a new base of information on which to build future efforts. To those who work in the field and to those millions who know the ravages of this illness first-hand, the *Fourth Special Report on Alcohol and Health* should prove a source of encouragement. I am pleased to present it to the Congress and to the Nation.

Patricia Roberts Harris
Secretary of Health and Human Services

January, 1981

Preface

Among the many problems that diminish the strength and well-being of the American people, alcohol-related problems are most salient. With significant linkages to suicide, homicide, accidental death and injury, chronic disease, family distress, and lowered productivity, alcoholism and problem drinking invade virtually every important aspect of reality. Personal tragedy, human suffering, and social burden follow in the wake of these problems with alarming consistency.

Fortunately, as this *Fourth Special Report on Alcohol and Health* gives evidence, substantial progress is being made in understanding the disease of alcoholism and in coping with the myriad of dysfunctional personal and social behaviors associated with problem drinking. A comprehensive alcoholism treatment system now exists when, just a decade ago, a systematic network of treatment services could only be imagined. Prevention programs addressed to alcohol-related problems have been conceived, designed, and started. In laboratories throughout the Nation, distinguished scientists are turning their attentions to the biological, psychological, and sociocultural factors that contribute to alcoholism and problem drinking. In the workplace and on the Nation's highways, important programs that increase the likelihood of early identification and intervention are now in place.

Recently, as Surgeon General of the United States, I published *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. In that report, threats to health were identified, discussed, and analyzed. The important concepts of health promotion and disease prevention were presented as major approaches to achieving significant reductions in these various threats to the health and well-being of the American people. *Healthy People* referred to destructive drinking practices as a major risk factor; our new knowledge suggests that these practices may constitute a preeminent risk factor. The *Fourth Special Report on Alcohol and Health* underscores these prior convictions. It presents the conditions under which drinking becomes a risk to health, the range of adverse consequences that may be incurred, and the measures that are being taken to diminish the risk.

As did the three documents that preceded it, this fourth report on new knowledge concerning the relationships between alcohol and health challenges some of our previously held beliefs about alcohol-related problems, substantiates others, and encourages us to search for further insights and understandings.

Julius B. Richmond, M.D.
Assistant Secretary for Health and
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Introduction

The National Institute on Alcohol Abuse and Alcoholism was established in 1971 because alcoholism in our society had become increasingly recognized as both a debilitating disease and a major public health problem in need of a significant Federal response. It is appropriate that we mark this 10-year anniversary in the life of the Institute by reflecting on the accomplishments of the past decade and on the challenges of the next.

There have been a number of specific advances since 1971, but perhaps the most significant achievement is the greater maturity that now guides this public health effort. This is apparent in the greater depth and breadth of understanding of those within the field, and in a more sophisticated understanding of alcoholism by the public. This maturity has brought us a deepened appreciation of the complexity of the disease, and has enabled us to discard many myths that once affected our responses to it. The veil of shame that in the past surrounded alcoholism is being lifted, allowing us to see it as a treatable disease and not as a failure of character. We now recognize that alcoholism is a multidimensional disease that cannot be simply defined or understood. And, like all diseases, it can strike the unsuspecting, reaching into all classes, races, and nationalities.

We now know that alcoholism involves an interplay of biological, behavioral, and cultural components within the individuals who are afflicted. We have come to understand that alcoholism involves biological factors, either as etiological indicators or as biomedical consequences, and that psychological and sociocultural factors enter in as well. The interaction of these components, varying as they do from individual to individual, further deepens the complexity of this disease and makes it quite unlike any other.

Our experience in this past decade has also made us acutely aware of the broad impact of problem drinking on our society, so much so that the litany of the damage done has become familiar to us all. Establishing a consensus on precise numbers is difficult, but there is no doubt that alcohol problems cost this country billions of dollars each year. We pay this cost in lost productivity in the workplace, in health and medical care expenses, in deaths and injuries from highway accidents, violent crimes, and fires. We also pay in ways that cannot be measured by cost accounting: in broken families, abused children, ruined careers, unrealized ambitions, in lives cut short. The ultimate cost to our Nation, reckoned in personal tragedies and social burdens, is incalculable.

Surveys consistently find that approximately 10 percent of adult Americans who drink are either alcoholics or experience problems with their drinking. Alcohol problems also reach into our schools, jeopardizing the futures of thousands of young people and causing their parents deep concern and anxiety. Ten percent of all deaths in this country are alcohol related, and many of them are caused when young people drink and drive.

More sophisticated analyses of how alcoholism and excessive drinking affect the human body have increased our understanding of their vast range of indirect health consequences. Alcohol appears to be involved in cancer, heart disease, and a number of serious gastrointestinal and neurological disorders. Its sweep is wide and its damage great.

Besides increasing our understanding of alcohol's potential for harm, the past 10 years have produced significant advances in the way we think about and treat this disease. Consider that a decade ago alcoholism was commonly thought to be a condition that could be treated only when the alcoholic hit rock bottom. An alcoholic had to be so desperately ill, so tired of living the life of an alcoholic, so in need of help that there seemed no way out. Only then, it was thought, could he or she benefit from treatment. In no other disease was such an idea accepted; in no other disease was it believed that the worse the illness, the greater the chance of arresting it. The consequences of this unfortunate myth were that many alcoholics received no help until their bodies were severely damaged and their family and social relationships shattered.

This myth has now been discarded. Alcoholism, like other diseases, is treated best when treated early. The great successes achieved by early intervention programs in the workplace—by occupational alcoholism programs—underscore this revolutionary change in our approach to treating the disease. The data supporting this change are evident from studies which demonstrate that when interventions are made with younger, less impaired, and socially stable alcoholics, improvement is far more probable than failure.

One challenge of the 1980s is to transfer creatively the concept of occupational alcoholism programs to schools, health care institutions, and highway safety efforts. We are encouraged that this concept has been successful in some schools and hospitals, demonstrating that the transfer can be made. At one New England hospital, for example, the entire staff has been trained to identify patients suffering from alcohol-related health problems. In its first year, 800 patients who otherwise would have gone undiagnosed were diagnosed, and one-half of them entered an alcoholism treatment program.

The continued success of early intervention programs, as well as their future prospects for growth, hinge on one crucial factor: the availability of treatment. When this Institute began, its mandate was to create and maintain a treatment system. That has remained our single most important mission, the linchpin of all our efforts. A decade ago, men and women suffering from alcohol problems had few places to turn; their chances of finding suitable treatment were slim. That is no longer the case. Today any man, woman, or teenager with an alcohol problem has a much greater chance for treatment and recovery now than he or she did just 10 years ago. The Institute is not solely responsible for this positive change, but it has been a critically important partner in the effort to create a national alcoholism treatment capacity, one that would not displace, but would enhance, the substantial volunteer effort already begun. Alcoholics Anonymous continues to flourish, and along with other self-help organizations, offers aid to millions of people.

This commitment to treatment is as important today as ever. However, the Institute has now reached the point when it must begin to concentrate on other issues that will insure the continuation of our treatment capacity. These are: the improvement of treatment skills; stable long-term treatment financing; a more basic understanding of the disease process; and discovery of better methods of preventing alcoholism. All of these efforts are directed toward reducing the enormous costs of alcoholism to individuals, their families, and the Nation.

Because alcoholism treatment remains a dynamic field, we need to focus more attention on demonstration treatment projects that potentially offer new treatment methodologies and technologies. These are often high risk investments, but they are investments the Institute is designed to support, and they may yield substantial savings in the future.

Stable, long-term treatment financing is the key to guaranteeing the continued availability of alcoholism treatment programs. Without treatment financing it is difficult to convince anyone with an alcohol problem, no matter how severe, that he or she should undergo treatment. How do you persuade a woman on an assembly line to go into treatment if she is already struggling to support her family? How do you ask a middle management executive to pay for his treatment if he is already paying for children in college? The answers are not easy. The costs are too high to be borne by the individual alone, so frequently treatment is not sought. The results are obvious: the continued destruction of a human life, and the high social costs we all ultimately bear.

For these reasons, the Institute considers expansion of health care insurance coverage for alcoholism to be one of the most important issues in the full development of the alcoholism health care delivery system. The Federal Government should explore the expansion of its health policies to include alcoholism under Medicare and Medicaid, and should provide States with technical assistance to implement and evaluate comprehensive coverage plans. This effort must extend also to private carriers who have in the past limited their coverage of alcoholism treatment.

Recently there have been signs that this is improving. Private insurance carriers are realizing the cost-benefit to them in reimbursing for alcoholism treatment, because it results in long-term reductions of other health care costs associated with excessive drinking. Neither the private carriers nor the Federal Government can be expected to bear the full burden of treatment financing. There must be a more thorough exploration of how the respective responsibilities can be equitably shared.

There may be no more important challenge for the energies and resources of the Institute in the coming decade than basic research. Although we have learned much about the pathology of alcoholism, there are many complicated and perplexing questions remaining in such areas as etiology, early identification, diagnosis, treatment, and prevention. The need for a substantially larger research effort was documented recently in a study by the Institute of Medicine. According to this study, heart and vascular disease costs society about the same amount as alcoholism, yet heart and vascular disease research receives 17 times more money than alcoholism research. Cancer costs society considerably less than alcoholism, yet cancer research receives 39 times more money. We do not suggest that heart and vascular disease or cancer research

should receive less money, but rather that alcoholism research should receive more. All are dread diseases; all have a devastating impact on our society; and research is our greatest hope of combatting them.

The National Institute on Alcohol Abuse and Alcoholism has supported alcoholism research in the past, but that effort has been relatively small. Money spent developing successful alcoholism prevention strategies, improved diagnostic and treatment methods, and better basic understanding of the biochemistry of alcoholism can save many times that investment by reducing the morbidity, mortality, incidence, and prevalence of this disease. The research we support at nine National Alcohol Research Centers and other extramural programs located at universities and research laboratories around the country and our intramural research effort have made progress in such areas as genetics and early detection, which give us tantalizing glimpses of the vast potential benefits of alcoholism research. The effective communication of research findings also can clarify for millions of people who have not had personal experience with alcoholism the true nature of this disease. There is no assurance that finding answers will be quick or easy. Research into such fundamental areas as human biochemistry and human behavior is complex and difficult. The long and troubling history of alcoholism is a testament to its resistance to easy answers.

Yet another challenge for this decade is to place alcohol programs in the larger context of disease prevention and health promotion. We must find more effective ways to demonstrate the appropriate use of alcohol, and they should become an integral part of the widespread Federal effort to encourage Americans to lead healthier lives. This has already begun with the publication of *Healthy People*, a book issued by the Surgeon General's Office that offers goals and guides for healthier living.

The effort to more clearly establish for Americans the specific health consequences of excessive alcohol consumption must be accelerated. The association between heavy drinking and liver disease is well known; but less well known is the fact that excessive consumption affects a number of organs and biological systems. For example, a possible consequence of excessive alcohol consumption during pregnancy is the fetal alcohol syndrome, a cluster of serious birth anomalies that is now the third leading cause of birth defects involving mental retardation in the Nation, and the only one that is preventable. Placing alcohol consumption within the framework of healthier living, helping people to understand the link between their consumption patterns and their health, is an important challenge for this Institute and for other public and private agencies throughout the country.

In every important sense the new challenges facing the Institute in the coming decade are logical extensions of the accomplishments of the past 10 years. Uncovering more fundamental knowledge, reducing the enormous costs of this disease, and building a permanent structure that assures the continuation of our national treatment network must be our goals for the future. The need to meet these critical challenges is clear. It is our obligation to the millions of individuals and families who suffer from an alcohol problem, and it is our obligation to the Nation which pays so high a cost.

John R. DeLuca
Director
National Institute on Alcohol Abuse and Alcoholism

A Note

This *Fourth Special Report on Alcohol and Health* is the result of the labors of many people. Contributions from a large number of distinguished scientists from throughout the Nation provided important basic resource documents. Other distinguished scientists served as reviewers of individual papers, as review board members, and as consultants.

The report is concerned largely with new information that has been developed since publication of the *Third Special Report on Alcohol and Health* in 1978. In this sense, it is an attempt to update information and is not intended to serve as a comprehensive historical review of the literature. Considering the large bodies of information that could be brought to bear upon the various topics discussed in this report, it is obvious that a comprehensive historical review of the literature would comprise a small library rather than a concise report to the Members of Congress on recently developed information.

The present report has limitations. These are perhaps more evident in certain sections of the report than in others. Difficult problems of definition, measurement, and research methodology preclude unambiguous conclusions in particular areas of investigation. With regard to some questions, the data are incomplete, inadequate, or simply lacking altogether. For other questions, useful theoretical frameworks and heuristic conceptualization have not yet been invented.

These problems of data and imagination enter into this report as they do in most scientific documents. However, the report does serve as a window on the steady stream of progress in the fields of alcoholism and alcohol studies. Perhaps most important, it alerts us to what it is that we do not know in these difficult and complex areas of investigation and suggests the next steps that must be taken in laboratory, community, and clinical contexts.

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Highlights

1–Patterns of Alcohol Consumption

- During the 1970s, the Nation's apparent consumption of ethanol continued to rise, but the rate of increase slowed considerably. By 1978, apparent consumption had risen to more than 2.7 gallons per year of ethanol per person 14 years of age and older.

- Beer accounts for 49 percent of the ethanol consumed by Americans; wine accounts for 12 percent; and distilled spirits for 39 percent.

- In 1979, self-reported consumption for U.S. adults showed no dramatic changes from previous years. Approximately one-third of the adult population continued to report abstention, one-third reported light drinking, and one-third reported either moderate (24 percent) or heavier (9 percent) drinking.

- In the heavier drinking category, males (14 percent) outnumber females (4 percent). While 25 percent of males reported abstaining from alcohol, 40 percent of females reported abstaining.

- Heavier drinking appears to peak at age 21–34 for males (19 percent), at age 35–49 for females (8 percent), and to decline thereafter for both sexes.

- Hispanic groups of both sexes, but especially males, reported relatively high rates of heavier drinking.

- Blacks of both sexes reported relatively high rates of abstention. However, among black adults who drink, the proportions of self-reported heavier drinkers are similar to those for most other groups.

- While the frequency and quantity of adolescent drinking does not appear to have changed much since the 1974 national survey, the proportion of 10th–12th graders who reported ever having consumed alcohol is very high—87 percent.

- In terms of volume of drinking, in the year prior to the 1978 survey, 25 percent of 10th–12th graders reported abstention, 7.6 percent reported infrequent drinking, and 18.8 percent reported light drinking. Heavier drinkers constituted approximately 15 percent of the sample surveyed.

- In the 1978 survey, a substantial number of youths reported drinking fairly large amounts of alcohol by age 15. Heavier and moderate/heavier drinking appears to increase to age 17 and then level off.

- Larger numbers of adolescent females reported abstention while larger numbers of adolescent males reported heavier drinking.

- With regard to trends in self-reported consumption, neither adults nor youths in the 10th–12th grades reported changes in either frequency or quantity of consumption since earlier surveys.

2–Drinking Problems: Variations and Prevalence

- Drinking problems are defined in terms of alcohol dependence, adverse effects of consumption, and alcohol consumption. Self-reports of various drinking problems are possible indicators of alcoholism and problem drinking but are not synonymous with them.

- When low criteria were used for classifying responses to a survey as indicating drinking problems, substantial numbers of adult drinkers reported experiencing various alcohol-related problems. Twenty percent of male drinkers and 10 percent of female drinkers reported one or more symptoms of alcohol dependence or loss of control over a 1-year period. Nine percent of male drinkers and 5 percent of female drinkers reported adverse consequences of consumption. Twenty-eight percent of adult male drinkers and 8 percent of adult female drinkers were classified as heavier drinkers.

- Approximately 15 percent of adolescent drinkers reported drinking at least once a week and consuming five or more drinks per drinking occasion. Thirty-one percent of 10th–12th graders reported experiencing drunkenness at least six times a year. Two percent of adolescents reported adverse consequences of consumption two or more times a year.

- In terms of alcohol misuse (defined as self-reports of drunkenness at least six times a year or negative consequences two or more times in at least three of five social areas), 31.2 percent of the adolescent sample were classified as alcohol misusers.

- More adolescent males reported alcohol misuse than did adolescent females. Increases in alcohol misuse with age were reported by males but not by females. Black and Hispanic adolescent males were substantially lower in alcohol misuse than were white males. Black and Hispanic adolescent females reported the lowest levels of alcohol misuse.

- With regard to trends in drinking problems, comparisons of 1979 national survey data with data from a number of earlier surveys revealed no striking changes—with one exception: Increases in symptomatic drinking are apparent, particularly for males, when 1979 national survey data are compared with survey data gathered in 1967. For youths, comparisons of 1978 national survey data with 1974 national survey data do not reveal significant changes in volume of consumption but do suggest a small, though probably reliable, decrease in adverse social consequences.

- Level of consumption is related substantially to both alcohol dependence and adverse effects. The higher the level of consumption, the greater the probability that a person will experience dependence symptoms and adverse physical and social consequences. Regular heavy drinking appears to be related to both adverse consequences and dependence. Intermittent heavy drinking may result in adverse consequences only.

- When high criteria were used for classifying responses to a survey as indicating drinking problems, substantial numbers of persons were classified as being at increased risk for alcoholism and problem drinking. Fifteen percent of adult male drinkers and 3 percent of adult female drinkers reported consuming 120 or more drinks per month. Five percent of male drinkers and 2 percent of female drinkers reported experiencing three or more symptoms of alcohol dependence. Nine percent of male drinkers and 5 percent of female drinkers reported adverse social consequences of consumption.

- A study reported that approximately 14 percent of U.S. Air Force personnel experience a serious alcohol problem over a period of a year. Approximately 5 percent of U.S. Air Force personnel reported alcohol dependence and an additional 9 percent reported experiencing at least one serious adverse consequence of alcohol consumption.

- On the basis of heavier consumption, approximately 15 percent of 10th–12th graders and 11 percent of 7th–12th graders surveyed were either at substantial risk for developing a drinking problem or were currently problem drinkers.

- Considering all measures of drinking problems and available recent survey data, approximately 10 percent of adult American drinkers are likely to experience either alcoholism or problem drinking at some point in their lives.

3–Biomedical Consequences of Alcohol Use and Abuse

- While alcohol-related mortality for several selected causes appears to have remained relatively constant, mortality rates for alcoholics continue to be higher than expected. One recent study reported a mortality rate 2.5 times greater than expected in a group of alcoholics followed over time.

- Cirrhosis mortality has been decreasing since 1973, but this decline has been offset by an increase in other types of alcohol-related mortality, especially highway accidents. For all ages, cirrhosis mortality is nearly twice as high for blacks as for whites. And for urban black males aged 25 to 34 the rates are 10 times as high as for white males of the same age.

- Heart muscle contractility is decreased at blood alcohol levels representing very mild to severe intoxication. Biochemical, microscopic, and submicroscopic changes are seen in the heart muscle cells of heavy drinkers.

- Longstanding use of substantial amounts of alcohol has been found in a large proportion of patients with unexplained heart muscle disease. This cardiomyopathy comprises 2 to 3 percent of patients hospitalized for heart disease. Abstinence from alcohol produces a good recovery rate in early stages of the disease and can produce marked recovery even in advanced stages.

- Brief drinking sprees in apparently healthy individuals can result in premature heartbeats or total loss of rhythmic beating in the heart's upper chambers.

- Epidemiologic studies show that in all races and both sexes, regular consumption of large amounts of alcohol is associated with a substantially higher prevalence of high blood pressure.

- Several studies have shown a statistically significant inverse correlation between alcohol use and susceptibility to heart attack from coronary atherosclerosis. While a plausible mechanism has emerged to explain these findings, it is not firmly established that alcohol in small amounts protects against coronary atherosclerosis.

- Alcohol is associated with stroke, phlebitis, and varicose veins and also may be involved in an unusual form of angina pectoris (chest pain) called Prinzmetal variant angina, which is widely believed to be due to spasms in large coronary arteries.

- Numerous studies have shown that acutely or chronically administered alcohol results in lowered testosterone levels in the serum of males of all species. The reduced testosterone level causes sexual impotence, loss of libido, breast enlargement, loss of facial hair, and testicular atrophy in many male alcoholics.

- Reduced levels of circulating testosterone in male alcoholics are due to enhanced testosterone clearance, depressed testosterone synthesis in the testes, and direct toxic effects of acetaldehyde on the testes.

- Brain dysfunction is considered to be one of the major consequences of alcoholism. In any given sample of alcoholics, the proportion of individuals with brain atrophy ranges from 50 percent to 100 percent, depending on the selectivity of the alcoholism treatment program from which the sample is drawn.

- Detoxified alcoholics demonstrate impaired performance on visual-spatial and perceptual-motor tests as well as on tests of adaptation, abstraction, memory, and problem solving. Social drinkers show a negative association between amount of alcohol normally consumed per drinking occasion and tests of abstracting and adaptive abilities.

- The old notion that brain damage from chronic alcohol abuse is irreversible is being reexamined. Several studies have shown partial reversal of brain atrophy and neuropsychological impairment in abstinent alcoholics.

- Heavy alcohol consumption has been related to an increased risk of cancer at various sites in the human body, especially the mouth, pharynx, larynx, and esophagus. Cancer risk is further increased for heavy drinkers who also use tobacco.

- The positive association between liver cancer and alcohol consumption is related to cirrhosis; very often the cancer is preceded or accompanied by cirrhosis or hepatitis and infection.

- In animals, alcohol has been shown to decrease birthweight, increase prenatal mortality, and produce a greater frequency of malformations.

- A rapidly growing body of literature provides evidence that abusive drinking during pregnancy is potentially detrimental to the development of the human fetus. Effects may range from mild physical and behavioral deficits to the fetal alcohol syndrome (FAS). The major features of FAS are mental retardation, poor motor development, extreme growth deficiency before birth and throughout childhood, and a characteristic cluster of facial abnormalities.

- With regard to adverse consequences of alcohol consumption other than FAS, studies have consistently found that heavier alcohol use during pregnancy is associated with decreased birthweight, greater frequency of spontaneous abortions, and behavioral and neurological effects on neonates.

- Incidence data have been obtained for certain regions of Europe. In Goteborg, Sweden, an incidence of 1/600 births for definite FAS with an equal number of probable FAS cases has been reported for the 7,600 births in that city over a recent 17-month period. A similar incidence was reported for Roubaix in the north of France. FAS data are not currently found in the large national data bases in the United States.

- Alcohol consumption during lactation and the consequent effects on nursing infants is also an area of concern. Alcohol readily enters the breast milk, thereby providing alcohol to the nursing infant.

- It is not yet known whether injury derived from alcohol abuse is a direct effect of alcohol on the fetus or an indirect effect mediated by altered maternal physiology, such as nutritional deficiency or physiologic damage to reproductive organs.

4–Social Implications of Alcohol Abuse

- In the United States, traffic accidents are the major cause of violent death. Between 35 and 64 percent of the drivers in fatal accidents had been drinking prior to the accident. Between 45 and 60 percent of all fatal crashes involving a young driver are alcohol related.

- As many as 50 percent of those who died in falling accidents had been drinking.

- Approximately one-half of adult fire deaths involve alcohol. Alcoholics were found to be 10 times more likely to die in fires compared with the general population.

- Alcohol plays a significant role in drownings. One study reported that 68 percent of drowning victims had been drinking and another study reported that 50 percent of such victims had been drinking.

- The relationship of alcohol to criminal behavior is complex and requires further empirical research. However, problem drinkers seem more likely than other offenders to have been drinking prior to, or during, the commission of a crime.

- Alcoholics are at particularly high risk of committing suicide. Between 15 and 64 percent of suicide attempters and up to 80 percent of suicides had been drinking at the time of the event. The risk of suicide for alcoholics is as much as 30 times greater than the risk of suicide for the general population.

- Among Native Americans, 5 of the 10 major causes of death are alcohol related: accidents; cirrhosis of the liver; alcoholism; suicide; and homicide. Among ethnic groups, Native Americans appear to have the highest prevalence of drinking problems.

- Employed women have a higher rate of alcoholism and employed married women have significantly higher rates of both problem drinking and heavier drinking than either single working women or housewives. Women appear to drink more in the company of men than in the company of other women. A woman's risk for alcohol-related problems is increased by living with a heavy drinker.

- Women are at high risk of abusing other drugs. Approximately one-third of recovered alcoholic women reported that they had abused prescription drugs, too.

- While women have much in common with men with regard to alcoholism treatment needs, increased recognition of the special needs of women in treatment has taken place.

- The relationship of alcohol consumption to family violence is complex and in need of careful empirical study. Studies of women seeking services for spouse abuse indicate that alcohol consumption by abusing husbands is clearly involved in this subpopulation. The role of alcohol consumption in spouse abuse in persons not seeking services is still unclear.

- Family violence is often reciprocal. The husband who physically abuses his wife and children may in turn be the target of violence by his wife and children.

- Studies of alcohol consumption and child abuse have not always differentiated physical abuse from neglect. However, some evidence indicates a relationship between alcohol abuse and child abuse. Moreover, recent evidence suggests a relationship between alcohol problems and incest. The nature and extent of the contributions of alcohol consumption, problem drinking, and alcoholism to child abuse, neglect, and incestuous relationships are far from clear. Research that distinguishes between abuse and neglect and distinguishes among alcohol consumption, intoxication, problem drinking, and alcoholism is essential if clarification is to be achieved.

- Children of alcoholic parents have been underserved and underresearched. Clinical efforts with children of alcoholics suggest that sensitively designed programs can achieve positive results.

- Problem drinking among adolescents appears to be associated with pessimism, unhappiness, boredom, aggressiveness, frustration, impulsiveness, distrust, cynicism, irresponsibility, inflexibility, and dissatisfaction. Correlations exist between adolescent problem drinking and antisocial or delinquent behavior. Heavier consumption has been linked to precocious sexual behavior, poor school performance, problem behavior in the classroom, number of classes cut from school, problems within the family, other drug use, and higher dropout rates.

- The economic costs of alcoholism and alcohol misuse to the individual and to society are difficult to estimate. In terms of lost production, health care expenditures, motor vehicle accidents, violent crimes, fire losses, and social responses, alcoholism and alcohol misuse have been estimated to cost $42 billion a year. Efforts are currently under way to improve cost assessment methodology, and an indepth study commissioned by the Alcohol, Drug Abuse, and Mental Health Administration is in progress.

5–Prevention of Alcohol-Related Problems: Strategies and Activities

- The Surgeon General's Report, a World Health Organization conference, and the DHHS prevention objectives for the year 1990 indicate increased national and international interest in the prevention of alcohol-related problems.

- The public health model, the distribution of consumption model, and the sociocultural model continue to be the most important research models in the prevention field.

- While the relationship between per capita consumption and alcohol-related problems continues to appear to be reliable, studies have failed to indicate feasible methods for reducing availability. Recent research suggests that the relationship of availability to consumption rates is complex with factors such as income and urbanism more closely related to these rates than is availability.

- Problem-specific approaches are now being pursued with regard to the prevention of alcohol-related problems.

6–Intervention

- Current prevention programs are aimed at minimizing the occurrences of alcohol-related problems through means other than treatment and rehabilitation. Projects for youth in educational and service organizations, projects for public information utilizing mass media and communications organizations, projects replicating earlier successful prevention strategies, and projects involving voluntary organizations and community movements have been undertaken.

- Studies involving Alcohol Beverage Control Boards have been implemented in several areas. These studies have been concerned with prevention in small rural communities, minimum purchasing age, and the impact of changes in alcohol availability upon drinking behavior among university students.

- Societal attitudes have been the most formidable barrier to successful intervention. However, recent observations suggest that considerable attitude change has occurred and the stigma associated with alcoholism and problem drinking has been reduced.

- Occupational programing is the most well developed and extensively implemented intervention approach. In 1950 there were approximately 50 occupational alcoholism programs; by 1980 the number of programs had increased to 4,400.

- In the private sector, approximately 25 percent of representative organizations had occupational alcoholism programs in 1972. In 1979, 56 percent of the organizations had implemented programs.

- Management and union support for occupational alcoholism programs has increased steadily since 1976. In 1979 the percentage of executives reporting lack of management support fell to less than 0.5 percent, while perceptions of union support have increased to 70 percent.

- Corporate social responsibility remains the single most important reason given for program adoption. Those most often referred to programs for help were at the rank and file, middle management, and staff employee levels; those least often referred were at the clerical and top management levels.

- The number of public sector occupational alcoholism programs has increased steadily. Since 1972, when there were very few programs, nearly half of all Federal installations have implemented programs. These Federal installations with programs employ over 80 percent of all Federal employees.

- Approximately 100,000 Federal Government employees have been referred to, or sought, treatment since such services were first offered in 1972.

- Founded in 1971, the Association of Labor and Management Administrators and Consultants on Alcoholism (ALMACA) now has 2,202 members with 5 regional chapters, 28 local chapters, and 11 "forming" chapters.

- Success rates for occupational programs are quite high and indicate the great promise of early intervention with younger, less impaired persons who have shorter treatment histories and greater social stability.

- Children of alcoholics are a high-risk group for whom early intervention strategies are now being developed and implemented. Current estimates are that at least 12 million such children exist in the United States. However, only 5 percent of these children are receiving help.

- A symposium on services to children of alcoholics was sponsored by NIAAA in September 1979. Recommendations from this symposium concerned the following: development of a greater commitment to this population by interested organizations and funding sources, encouragement of various professional schools to incorporate training in family alcoholism, provision of funding for innovative programs, collaboration with State alcoholism authorities to provide appropriate training, and increasing public awareness of the incidence and severity of family alcoholism.

- Drinking-driving programs are an important context for early intervention. Large numbers of persons enter formal alcoholism treatment as a consequence of early intervention resulting from an arrest for driving while intoxicated and referral to a drinking driver program.

- Possible intervention efforts other than treatment aimed at reducing problem drinking and driving include increased risk of arrest, optional levels of severity of punishment, public information and education, third-party intervention, changing the drinking age, screening the driving population, detection devices in cars, and changes in the driving environment designed to reduce the negative effects of driving while intoxicated. While these possible interventions differ in terms of feasibility, cost effectiveness, acceptability to the public, and probable effectiveness, all are deserving of continued investigation.

- The number of persons receiving treatment for alcoholism and problem drinking has continued to increase. However, approximately 85 percent of the population of alcoholics and problem drinkers are not receiving formal treatment services.

- In NIAAA-funded programs over 75 percent of the services received by alcoholics and problem drinkers are outpatient services.

- Alcoholism treatment has been shown to be effective, particularly for socially stable, middle class alcoholics. Studies of treatment effectiveness for this group, which constitutes the majority of alcoholics in the United States, have yielded improvement rates ranging from 30 percent to 92 percent. For socially stable alcoholics, sustained abstention rates of approximately 60 percent have been reported at 18-month followup.

- For socially unstable alcoholics of lower socioeconomic standing, it is difficult to evaluate the effectiveness of alcoholism treatment per se since highly negative extra treatment factors typically mask or pervert treatment gains over time. Alcoholism treatment may be a necessary but not sufficient condition for socially unstable alcoholics of lower socioeconomic standing. For this group, substantial extra treatment supports concerning primary survival needs, education and training, and return to the opportunity structure of society are necessary if changes acquired through treatment are to be maintained.

- A substantial minority of persons admitted to alcoholism treatment have reported nonproblem drinking over brief periods of time. Sustained nonproblem drinking, however, has been shown to be unlikely.

- Psychological status at admission may be an important moderating variable in predicting individual response to various treatments.

- Depending upon psychological status, medical condition, and a host of sociocultural, familial, and situational factors, patients may be served appropriately in hospital-based inpatient programs, non-hospital-based freestanding alcoholism treatment facilities, or outpatient clinics. Research continues on the effectiveness of different treatment contexts and lengths of stay for particular patients.

- Depending upon a number of factors, safe detoxification may take place in either a medical or a social setting and the management of withdrawal may involve medical or psychosocial procedures, or a combination of the two. While it is difficult to estimate precisely the numbers of persons who could be detoxified safely in a social setting rather than a medical setting, recent research and experience suggest that these numbers may be substantial.

- Research on specific treatment methods has continued to appear and further refinements in existing methods have been made. However, demonstrations of the value of any one method in isolation from others have been infrequent. For the most part, treatment programs use multimodal treatment methods.

- Family treatment is increasing but is still absent from the majority of programs. In 1978, in NIAAA-funded programs, 9 percent of the patients were involved in family treatment.

- Efforts to understand the changing population of the public inebriate and to provide for the needs of the skid row alcoholic continue. The public inebriate population is heterogeneous with regard to social class, sex, and primary diagnosis; only a portion of this population fits the stereotype of skid row alcoholism. Skid row alcoholics are also heterogeneous and include a number of identifiable subgroups. Greater understanding of the skid row subgroups has been achieved. Attention to the design of ideal service delivery systems, multimodal treatment and rehabilitative programing, appropriate expectations, and commitment to provision of adequate resources are likely to result in realistically positive achievements with these groups.

- In 1978 NIAAA's 18 funded specialized problem-drinking-driver programs served 15,798 persons. Twenty-eight percent of all intakes to treatment were the result of an arrest for driving while intoxicated.

- Efforts to find ways of providing appropriate services to several special population groups continue: the physically impaired alcoholic, the incarcerated alcoholic, and the alcoholic migrant worker. Studies of these special groups are needed, as are studies of how the treatment system may be adapted to meet their requirements.

- There is a paucity of research data on cultural factors in treatment and on the design of culturally sensitive programs and systems of service delivery. Virtually all aspects of culturally appropriate treatment require extensive empirical investigation.

8–Fiscal and Human Resources

- In 1979 funds for Federal projects devoted solely to the treatment of alcoholism and alcohol abuse amounted to approximately $180 million.

- The Veterans Administration (VA) is the largest provider of direct treatment services to alcoholic patients. In fiscal year 1979 the 100 VA Alcoholism Dependence Treatment Programs served almost 50,000 patients.

- The NIAAA was responsible for 30 percent of all Federal expenditures for treatment services in 1979, with expenditures of $84 million.

- Medicare categorizes alcoholism and drug abuse within psychiatric or mental health services; coverage for these problems is less than that available for physical illness.

- A 1978 NIAAA-funded study found that the majority of State Medicaid plans are silent on the issue of coverage for alcoholism treatment services.

- The NIAAA has recently joined with the Health Care Financing Administration in designing a 4-year $1 million demonstration project to expand alcoholism benefits under Medicare and Medicaid in five regions of the United States.

- Under title XVI of the 1973 Amendments to the Social Security Act, Supplemental Security Income (SSI) benefits are available to alcoholics in treatment as disabled persons.

- Available alcoholism benefits under CHAMPUS are brief hospital care for detoxification, inpatient rehabilitation, and outpatient psychiatric care. Consideration is being given to further expansion of alcoholism benefits.

- The Federal Government offers approximately 50 health insurance plans, most of which include alcoholism benefits. Aetna Life and Casualty Company and NIAAA are currently involved in a joint project to provide systematic cost and utilization data with regard to a newly expanded Aetna alcoholism benefit for 300,000 Federal employees.

- In 1980 the Alcoholism Services Development Program was implemented. The purpose of this program is to demonstrate that systematic planning by State and local governments, communities, service providers, and consumers can result in more responsive and efficient service systems, eventually decreasing reliance upon Federal funds.

- The NIAAA has provided leadership in the form of technical assistance materials: model cost-accounting manuals, a model alcohol insurance benefit package, a health insurance resource kit, and development of a set of treatment standards in cooperation with the Joint Commission on Accreditation of Hospitals.

- The NIAAA has continued to work with public and private insurers to encourage expanded alcoholism benefits and, in particular instances, has joined demonstration projects involving insurance carriers.

- A large source of public funding for all alcoholism services is taxes raised by the States. In fiscal year 1979, the States expended about $203 million, or 25 percent of the total funds available. Local revenues contributed roughly $74 million for alcoholism services in fiscal year 1979.

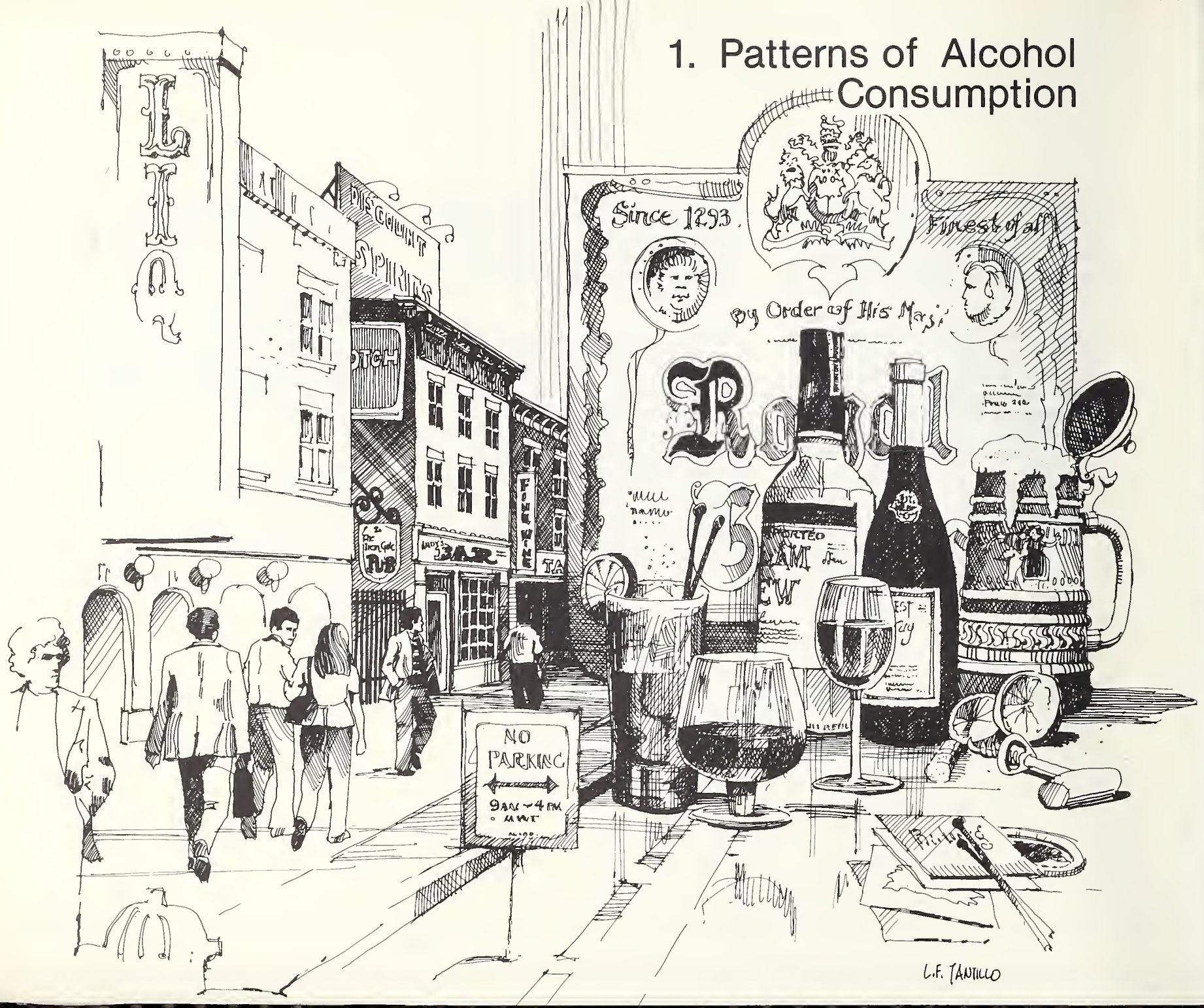
- About 85 percent of the 70 Blue Cross plans nationwide now recognize alcoholism as a covered condition and provide benefits that are generally comparable with those for other covered diagnoses.

- Alcoholism counselors, degreed and nondegreed, constitute the largest manpower resource in the treatment field. Approximately 35 percent of treatment personnel are alcoholism counselors. Administrative and support staff account for approximately 35 percent of full-time employees. The remaining full-time employees are distributed among the professions of medicine, nursing, psychology, and vocational/recreational therapy.

- The NIAAA is currently funding an indepth study of standards for the credentialing of alcoholism counselors.

- Efforts are under way to increase alcoholism-specific curricula in various professional schools and to expand training opportunities in alcoholism to physicians, psychologists, nurses, social workers, and others whose disciplines bring them into contact with alcoholic patients or clients.

1. Patterns of Alcohol Consumption



Viewed in historical perspective, American drinking practices appear dynamic rather than static. Shifts in types of beverages consumed, increases and decreases in volume of consumption, and population differences over time are evident in the historical record.

Apparent consumption[1] of distilled spirits, for example, showed a marked decrease from 1850 to 1920. During the same period, the apparent consumption of beer and wine increased substantially. And from 1934 to 1978, overall trends showed increases in apparent consumption of all three types of beverages, with the rate of increase varying for given periods and types of beverages (Distilled Spirits Council of the United States 1978*a,b*; Keller and Gurioli 1976; U.S. Brewers Association 1979; U.S. Department of Health, Education, and Welfare 1978, 1980; Wine Institute 1977–1978).

The 1960s showed a more rapid increase in apparent consumption as the relatively stable rate of 2 gallons of ethanol[2] per person per year of the 1950s rose to 2.5 gallons by 1970. In effect, a 25 percent increase in apparent consumption had taken place in one decade. (See figure 1.)

[1] Apparent consumption is one of two major estimates of alcoholic beverage consumption. It is derived from official reports of States, tax-paid withdrawal records, and, in some cases, reports of sales by the beverage industry. The second major estimate is self-reported consumption and is derived from persons' responses to survey instruments.

These large changes in American drinking practices over time give rise to the need for frequent monitoring of patterns of alcohol use and associated problems. In response to this need, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) continues to gather data on apparent consumption and has funded several recent national surveys (Clark and Midanik in press; Rachal et al. in press). The results of these surveys form the basis for the following discussion of new knowledge gained since publication of the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978). Information concerning apparent consumption will be considered first. (See table 1.)

Apparent Consumption

Recent National Trends in Apparent Consumption

Although apparent consumption on a national level continued to rise during the 1970s, the rate of increase slowed considerably. By 1978, apparent consumption rose to more than 2.7 gallons per year of ethanol per person 14 years of age and older. In contrast to the 25 percent increase for the 1960s, the rate of increase in apparent consumption of ethanol for the 1970s slowed to 8 percent.[3]

[2] Ethanol as used here is synonymous with the term *absolute alcohol*. It refers to the volume of pure ethyl alcohol consumed whether from beer, wine, or distilled spirits. A rough approximation to numbers of drinks can be obtained by doubling ethanol volume. One ounce of ethanol = two drinks, 2 ounces of ethanol = four drinks, etc.

In the United States, apparent consumption now averages about 1 ounce of ethanol (approximately two drinks) each day for each person 14 years of age and older. Averages, however, can be misleading. Since approximately one-third of the U.S. adult population aged 18 years and older reports abstaining from alcoholic beverages (Clark and Midanik in press), average daily consumption for those who do drink is higher—1.5 ounces of ethanol (three drinks). Moreover, a small proportion of adults drink far more than the average while the majority of adults drink less. It has been estimated that more than 16 million adults 18 years and older (approximately 11 percent of the adult population) consume about half of all beverages sold (Malin et al. in press).

[3] Apparent consumption rates are sensitive to assumptions concerning ethanol content of various beverages. The calculations for the trend in apparent consumption for the 1970s are based upon the assumed values noted in figure 1. These assumed values in figure 1 are based upon sources cited in Malin et al. (in press). The slowing of the rate of increase in apparent ethanol consumption for the 1970s may have been due in part to a trend toward lower alcohol content in alcoholic beverages. Thus, the apparent ehtnaol consumption for 1978 is estimated here as 2.73 gallons per year per person 14 years and older; this is 3 percent lower than the 2.82 gallons per year that would be estimated for the same population if earlier (slightly higher) estimates of beverage proof were to be used.

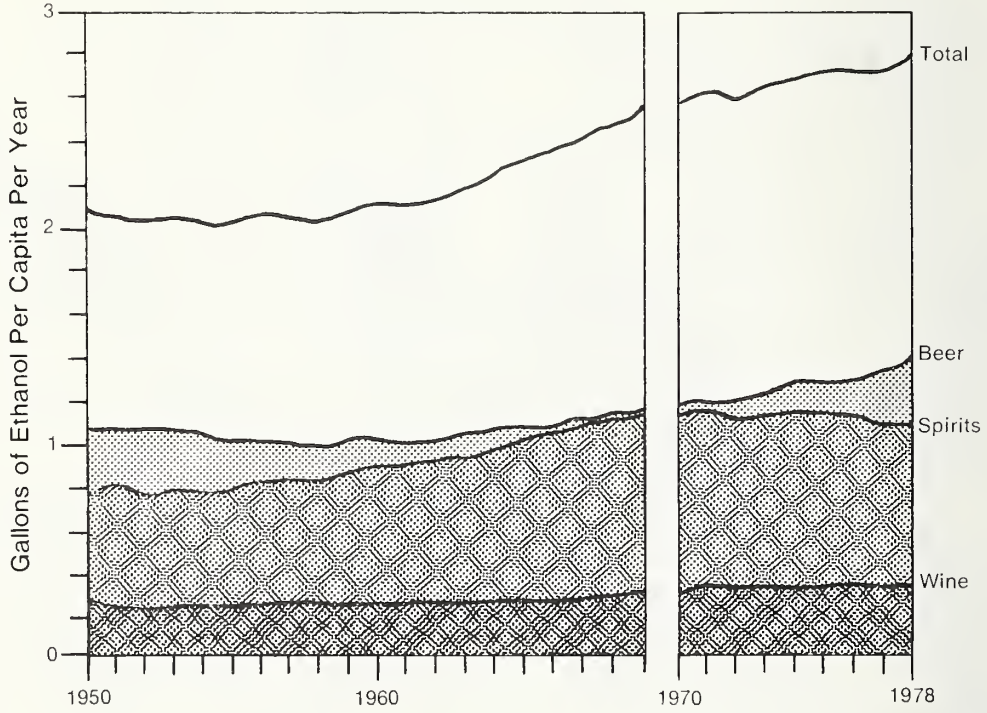
With regard to choice of beverage, it is clear that Americans are drinking more beer than either wine or distilled spirits. Per capita consumption, when averaged over the U.S. population aged 14 and older, equals nearly 30 gallons of beer each year. This is equivalent to 320 12-ounce cans of beer. Americans consume nearly as much ethanol from beer (49 percent) as from wine (12 percent) and distilled spirits (39 percent) combined (Malin et al. in press).

Apparent Consumption by State

For the period 1970–78, per capita apparent consumption increased or remained constant in all but five States—Alabama, Connecticut, Delaware, New Jersey, and New York—and the District of Columbia. Nevada has now surpassed Washington, D.C., as the Nation's leader in per capita apparent consumption.[4]

FIGURE 1

Apparent U.S. Consumption of Alcoholic Beverages in Gallons of Ethanol Per Capita of the Drinking-Age Population, 1950-1978



SOURCE: Malin et al. (in press).

Note: Spirits: 1950-71 45.0 percent;
1972-75 43.0 percent;
1977-78 41.1 percent

Wine: 1950-51 18.0 percent;
1952-68 17.0 percent;
1969-71 16.0 percent;
1972-76 14.5 percent;
1977-78 12.9 percent

Beer: 1950-78 4.5 percent

[4] It should be noted that when per capita estimates of consumption based on sales data are made for certain States, a major source of error lies in the choice of attributable population base. Certain States have extremely transient populations. Nevada, New Hampshire, Vermont, and the District of Columbia have substantial nonresident sales. No accurate estimates for such transient trade are available, and only resident population estimates are available for computing apparent per capita consumption. Thus, for some States, values may be inflated and cannot be taken as precise estimates of apparent per capita consumption of the resident population.

TABLE 1

Apparent U.S. Consumption of Alcoholic Beverages in Gallons of Ethanol Per Capita of the Drinking Age Population,[1] U.S.A., 1850-1978

	Distilled Spirits		Wine		Beer		
Year	Beverage Volume	Ethanol Volume	Beverage Volume	Ethanol Volume	Beverage Volume	Ethanol Volume	Total
15 years +							
1850	4.17	1.88	0.46	0.03	2.70	0.14	2.10
1860	4.79	2.16	0.57	0.10	5.39	0.27	2.53
1870	3.40	1.53	0.53	0.10	8.7	0.44	2.07
1871-80	2.27	1.02	0.77	0.14	11.26	0.56	1.72
1881-90	2.12	0.95	0.76	0.14	17.94	0.90	1.99
1891-95	2.12	0.95	0.60	0.11	23.42	1.17	2.23
1896-1900	1.72	0.77	0.55	0.10	23.72	1.19	2.06
1901-05	2.11	0.95	0.71	0.13	26.20	1.31	2.39
1906-10	2.14	0.96	0.92	0.12	29.27	1.47	2.60
1911-15	2.09	0.94	0.79	0.14	29.53	1.48	2.56
1916-19	1.68	0.76	0.69	0.12	21.63	1.08	1.96
			-PROHIBITION-				
1934	0.64	0.29	0.36	0.07	13.58	0.61	0.97
1935	0.96	0.43	0.50	0.09	15.13	0.68	1.20
1936	1.20	0.59	0.64	0.12	17.53	0.79	1.50
1937	1.43	0.64	0.71	0.13	18.21	0.82	1.59
1938	1.32	0.59	0.70	0.13	16.58	0.75	1.47
1939	1.38	0.62	0.79	0.14	16.77	0.75	1.51
1940	1.43	0.67	0.01	0.16	16.29	0.73	1.56
1941	1.58	0.71	1.02	0.18	17.97	0.81	1.70
1942	1.89	0.85	1.11	0.20	20.00	0.90	1.95
1943	1.46	0.66	0.94	0.17	22.26	1.00	1.83
1944	1.00	0.76	0.02	0.17	25.22	1.13	2.06
1945	1.95	0.88	1.13	0.20	25.97	1.17	2.25
1946	2.20	0.99	1.34	0.24	23.75	1.07	2.30
1947	1.69	0.76	0.90	0.16	24.56	1.11	2.03
1948	1.56	0.70	1.11	0.20	23.77	1.07	1.97
1949	1.55	0.70	1.21	0.22	23.48	1.06	1.98
1950	1.72	0.77	1.27	0.23	23.21	1.04	2.04
1951	1.73	0.78	1.13	0.20	22.92	1.03	2.01
1952	1.63	0.73	1.22	0.21	23.20	1.04	1.98
1953	1.70	0.77	1.19	0.20	23.04	1.04	2.01
1954	1.66	0.74	1.21	0.21	22.41	1.01	1.96
1955	1.71	0.77	1.25	0.22	22.39	1.01	2.00
1956	1.31	0.81	1.27	0.22	22.18	1.00	2.03
1957	1.77	0.80	1.26	0.22	21.44	0.97	1.99
1958	1.77	0.80	1.27	0.22	21.35	0.96	1.98
1959	1.86	0.84	1.28	0.22	22.15	1.00	2.06
1960	1.90	0.86	1.32	0.22	21.95	0.99	2.07
1961	1.91	0.86	1.36	0.23	21.47	0.97	2.06
1962	1.99	0.90	1.32	0.22	21.98	0.99	2.11
1963	2.02	0.91	1.37	0.23	22.51	1.01	2.15
1964	2.01	0.95	1.41	0.24	23.08	1.04	2.23
1965	2.21	0.99	1.42	0.24	23.07	1.04	2.27
1966	2.26	1.02	1.40	0.24	23.52	1.06	2.32
1967	2.34	1.05	1.46	0.25	23.81	1.07	2.37
1968	2.44	1.10	1.51	0.26	24.33	1.09	2.45
1969	2.51	1.13	1.62	0.26	24.90	1.12	2.51
14 years +							
1970	2.48	1.12	1.71	0.27	25.23	1.14	2.53
1971	2.50	1.13	1.93	0.31	25.63	1.15	2.59
1972	2.52	1.08	2.10	0.30	25.90	1.17	2.55
1973	2.57	1.11	2.14	0.31	26.77	1.20	2.62
1974	2.59	1.10	2.13	0.31	27.76	1.25	2.66
1975	2.58	1.11	2.22	0.32	28.09	1.26	2.69
1976	2.56	1.10	2.24	0.32	28.09	1.26	2.68
1977	2.56	1.05	2.37	0.31	29.05	1.31	2.67
1978	2.60	1.07	2.51	0.32	29.78	1.34	2.73

SOURCES: Data for 1950-1969: updated from Keller and Gurioli (1976).

Data for 1970-1978: calculated using data from Distilled Spirits Council of the United States, Inc. (1978*a*, 1978*b*); U.S. Department of Commerce (1980); U.S. Brewers Association (1979); Wine Institute (1977-78).

Note: For 1970 through 1978 data, the following percentages were used to compute ethanol:
Spirits: 1970-71 45.0% (A&H3)[2]; 1972-76 43.0% (A&H3); 1977-78 41.1% (SAPIS)[2]
Wine: 1970-71 16.0% (A&H3); 1972-76 14.5% (A&H3); 1977-78 12.9% (SAPIS)
Beer: 4.5% (A&H3)

[1] Data through 1969 are based on a drinking-age population of 15 years and over; data beginning with 1970 are based on a drinking-age population of 14 years and over.

[2] A&H3 refers to the *Third Special Report to the U.S. Congress on Alcohol and Health* (Department of Health, Education, and Welfare 1978). SAPIS refers to the State Alcoholism Program Information System.

TABLE 2

Apparent U.S. Consumption of Alcoholic Beverages in Gallons of Ethanol Per Capita of the Drinking Age Population

State	Distilled Spirits		Wine		Beer		Total Ethanol		Rank	Percent Change in Total Ethanol from
	1970	1978	1970	1978	1970	1978	1970	1978	1978	1970 to 1978
Alabama	0.70	0.87	0.09	0.12	0.60	0.98	1.39	1.97	46	42
Alaska	2.07	1.71	0.37	0.46	1.18	1.42	3.62	3.59	4	-1
Arizona	1.05	1.14	0.32	0.39	1.37	1.78	2.74	3.31	10	21
Arkansas	0.59	0.72	0.13	0.11	0.71	0.97	1.43	1.80	50	26
California	1.37	1.32	0.63	0.68	1.10	1.42	3.10	3.42	6	10
Colorado	1.26	1.44	0.31	0.47	1.18	1.50	2.75	3.41	7	24
Connecticut	1.46	1.20	0.34	0.38	1.00	1.08	2.80	2.66	30	-5
Delaware	1.74	1.36	0.21	0.23	1.17	1.34	3.12	2.93	19	-6
District of Columbia	4.44	3.09	0.82	0.95	1.39	1.43	6.65	5.47	2	-18
Florida	1.52	1.43	0.30	0.34	1.09	1.52	2.91	3.29	11	13
Georgia	1.02	1.15	0.14	0.18	0.79	1.12	1.95	2.45	34	26
Hawaii	1.13	1.31	0.25	0.47	1.11	1.39	2.49	3.17	12	27
Idaho	0.75	0.83	0.10	0.28	1.20	1.51	2.05	2.62	31	28
Illinois	1.34	1.18	0.27	0.31	1.21	1.38	2.82	2.87	20	2
Indiana	0.69	0.77	0.12	0.16	1.00	1.20	1.81	2.13	44	18
Iowa	0.68	0.74	0.06	0.11	1.09	1.52	1.83	2.37	36	30
Kansas	0.65	0.66	0.09	0.11	0.85	1.14	1.59	1.91	47	20
Kentucky	0.84	0.77	0.08	0.09	0.93	0.99	1.85	1.85	48	0
Louisiana	0.91	1.07	0.29	0.25	1.20	1.35	2.40	2.67	28	11
Maine	1.03	1.09	0.10	0.27	1.24	1.31	2.37	2.67	28	13
Maryland	1.39	1.37	0.25	0.31	1.31	1.37	2.95	3.05	15	3
Massachusetts	1.35	1.25	0.30	0.40	1.15	1.39	2.80	3.04	16	9
Michigan	1.07	1.05	0.24	0.27	1.37	1.43	2.68	2.75	23	3
Minnesota	1.23	1.16	0.16	0.23	1.14	1.31	2.53	2.70	26	7
Mississippi	0.71	0.92	0.08	0.10	0.82	1.16	1.61	2.18	42	35
Missouri	1.00	0.80	0.20	0.20	1.12	1.32	2.32	2.32	38	0
Montana	1.03	1.09	0.13	0.20	1.54	1.83	2.70	3.12	14	16
Nebraska	1.01	0.90	0.13	0.18	1.28	1.50	2.42	2.58	33	7
Nevada	3.18	3.69	0.67	0.85	1.73	2.24	5.58	6.78	1	22
New Hampshire	2.83	2.93	0.32	0.54	1.68	1.98	4.83	5.45	3	13
New Jersey	1.38	1.10	0.38	0.42	1.17	1.17	2.93	2.69	27	-8
New Mexico	0.98	0.98	0.36	0.32	1.20	1.65	2.54	2.95	18	16
New York	1.43	1.15	0.40	0.42	1.17	1.18	3.00	2.75	23	-8
North Carolina	0.91	0.86	0.16	0.21	0.72	1.09	1.79	2.16	43	21
North Dakota	1.02	1.15	0.11	0.16	1.21	1.41	2.34	2.72	25	16
Ohio	0.81	0.73	0.19	0.20	1.22	1.30	2.22	2.23	40	0
Oklahoma	0.84	0.83	0.15	0.14	0.78	1.08	1.77	2.05	45	16
Oregon	0.90	0.98	0.39	0.47	1.17	1.35	2.46	2.80	21	14
Pennsylvania	0.82	0.74	0.19	0.21	1.26	1.36	2.27	2.31	39	2
Rhode Island	1.17	1.15	0.38	0.49	1.28	1.53	2.83	3.17	12	12
South Carolina	1.08	1.20	0.16	0.17	0.80	1.23	2.04	2.60	32	27
South Dakota	0.90	1.05	0.13	0.17	0.93	1.20	1.96	2.42	35	23
Tennessee	0.59	0.80	0.06	0.12	0.87	1.27	1.52	2.19	41	44
Texas	0.74	0.85	0.17	0.20	1.31	1.71	2.22	2.76	22	24
Utah	0.57	0.62	0.12	0.14	0.75	0.97	1.44	1.73	51	20
Vermont	1.73	1.59	0.39	0.47	1.38	1.51	3.50	3.57	5	2
Virginia	1.02	0.91	0.20	0.21	1.11	1.22	2.33	2.34	37	0
Washington	1.08	1.14	0.39	0.48	1.19	1.39	2.66	3.01	17	13
West Virginia	0.69	0.79	0.09	0.09	0.87	0.96	1.65	1.84	49	12
Wisconsin	1.25	1.26	0.22	0.28	1.71	1.80	3.18	3.34	9	5
Wyoming	1.15	1.36	0.16	0.22	1.28	1.53	2.59	3.41	7	32
Total U.S.	1.12	1.07	0.27	0.32	1.14	1.34	2.53	2.73	-	8

SOURCE: Distilled Spirits Council of the U.S., Inc. (1978*a*, 1979); U.S. Brewers Association, Inc. (1978); U.S. Department of Commerce (1980); Wine Institute (1970, 1979).

Notes: Drinking age population is assumed to be 14 years and older. Ethanol = 4.5 percent for beer (U.S. Department of Health, Education, and Welfare 1978); 16 percent for wine in 1970 (U.S. Department of Health, Education, and Welfare 1978); 12.9 percent for wine in 1978 (SAPIS); 45 percent for spirits in 1970 (U.S. Department of Health, Education, and Welfare 1978); 41.1 percent for spirits in 1978 (SAPIS).

For comparative purposes only, amounts are calculated according to "tax-paid withdrawals" and do not show illegally produced alcohol that is consumed or certain other sales, such as military sales.

For the period 1970–78, most Southern States showed large percent increases in per capita consumption, although their per capita apparent consumption is still lower than that in many States in other regions. Increases of more than 20 percent were also seen in half of the Western States. The greatest increases were shown in Tennessee (44 percent), Alabama (42 percent), Mississippi (35 percent), Wyoming (32 percent), Iowa (30 percent), Idaho (28 percent), Hawaii (27 percent), South Carolina (27 percent), Arkansas (26 percent), and Georgia (26 percent).

Apparent consumption of ethanol from beer increased or remained at the same level in every State. By 1978 there were only eight States (Alaska, Connecticut, Delaware, the District of Columbia, Georgia, Nevada, New Hampshire, and Vermont) where per capita ethanol intake from spirits exceeded that from beer. In many States, apparent per capita beer consumption rose more than 30 percent; and in Alabama, apparent per capita beer consumption rose by over 60 percent.

Ethanol consumption from wine also increased in most States, and increased 19 percent for the Nation as a whole. In 21 States, apparent per capita wine consumption rose more than 25 percent. In only four States (Arkansas, Louisiana, New Mexico, and Oklahoma) did apparent consumption decrease, even though the percent of alcohol in wine decreased by 19 percent during these years (U.S. Department of Health, Education, and Welfare 1980).

Distilled spirits ethanol consumption, while increasing in 27 States, decreased by 4 percent in the United States as a whole. (See table 2.)

Self-Reported Consumption

National Surveys of Self-Reported Consumption

In addition to apparent consumption data, information concerning patterns of consumption is available from two recent NIAAA-funded surveys. The first of these surveys (Clark and Midanik in press), conducted in 1979, was designed to represent adults aged 18 years and older living in households in the contiguous States. Interviews were conducted with 1,772 respondents, 71 percent of those eligible. Males made up 43 percent of those interviewed and females 57 percent.

The second survey (Rachal et al. in press), conducted in 1978, was addressed to youths and consisted of a three-stage, stratified random sample of 75 schools selected to be representative of all 10th–12th graders in the contiguous States and the District of Columbia. Responses were obtained from 4,918 students.

Results of these surveys provide estimates of recent drinking patterns for adults and youths, males and females, and, to a lesser extent, certain subgroups of the U.S. population. Survey research methods yield different estimates of consumption than do methods concerned with apparent consumption. In general, self-reported consumption accounts for only 40 to 60 percent of beverage sales (Pernanen 1974). Underreporting of true consumption in self-reports is assumed to be one reason for the discrepancy. Other reasons include the use of household samples in survey research that seriously underrepresent very heavy drinkers and the failure of most survey instruments to assess consumption on atypical days as well as typical days (Polich and Orvis 1979).

Self-Reported Consumption by Adults

In 1979, self-reported consumption for adults in the U.S. population did not show dramatic shifts from recent years. Approximately one-third of the adult population reported that they abstain from alcohol, another one-third reported lighter drinking, and one-third reported either moderate (24 percent) or heavier (9 percent) drinking.[5]

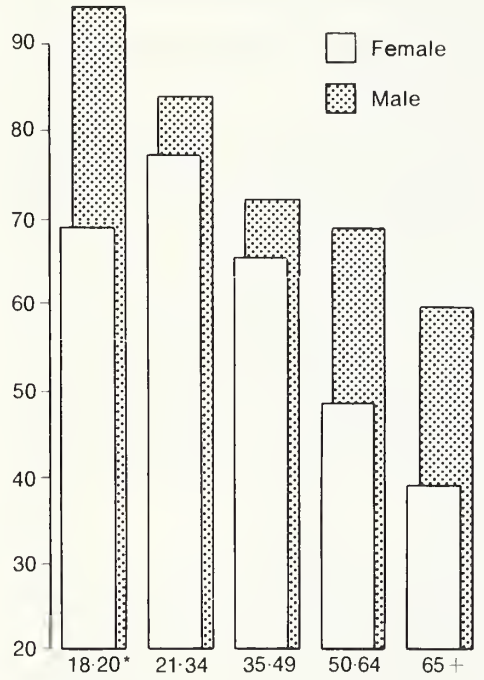
[5] Abstainer = 0 ounces of ethanol/day
Lighter = 0.01–0.21 ounces of ethanol/day
Moderate = 0.22–0.99 ounces of ethanol/day
Heavier = 1.0 or more ounces of ethanol/day

Self-reported consumption by males in 1979 continued to show differences from female reports, particularly in the abstainer and heavier drinking categories. While 25 percent of males reported abstaining, 40 percent of females reported abstaining. In the heavier drinking category, males (14 percent) outnumbered females (4 percent).[6]

In the lighter drinking category, females (38 percent) outnumbered males (29 percent). Self-reported moderate drinking was greater for males (31 percent) than for females (18 percent).

FIGURE 2

Percentage of Male and Female Drinkers by Age Groups



SOURCE: Clark and Midaník (in press).

*Note: Results for 18-20 age group must be viewed cautiously since the number of respondents was small.

The relationship of age to male and female drinking is shown in figure 2. As can be seen, the percentages of male and female drinkers showed a decrease with age with the exception of an increase in the percentage of female drinkers from age 18–20 to age 21–34. As figure 3 shows, heavier drinking appeared to peak at age 21–34 for males (19 percent) and at age 35–49 for females (8 percent) and thereafter to decrease for both sexes. By age 65 and over, self-reported consumption in the heavier drinking category had dropped to 8 percent for males and 2 percent for females.[7]

National surveys face a common problem in estimating drinking patterns in population subgroups—too few cases for a given group to arrive at statistically meaningful conclusions. The 1979 national survey was no exception. However, the data do provide glimpses into the drinking patterns of certain subgroups.

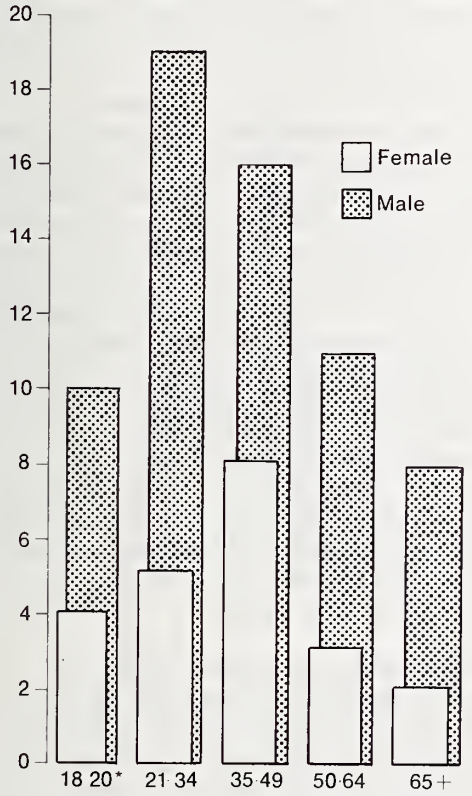
[6] Differences between males and females in self-reported consumption must be interpreted with caution since differences in body weight complicate matters. In one recent study (Braiker et al. in press) where adjustments for differing body weights were made, differences in consumption of ethanol between males and females admitted to treatment essentially disappeared.

[7] Results for the older age groups in the heavier drinking categories must be examined carefully for a number of reasons.

1. Heavier drinkers have a shorter life expectancy.
2. Household surveys probably miss a large number of the heavier drinking elderly who do not reside in the typical household.
3. National surveys may undersample geographical locations containing large numbers of the elderly.

FIGURE 3

Percentage of Male and Female Heavier Drinkers by Age Groups



SOURCE: Clark and Midanik (in press).

*Note: Results for 18-20 age group must be viewed cautiously since the number of respondents was small.

Hispanics of both sexes, but especially males, have relatively high rates of heavier drinking. This finding is in agreement with findings from earlier surveys (Cahalan and Room 1974; Clark 1977).

The 1979 survey also found that blacks, especially black women, have a relatively large proportion of abstainers. Among black adults who drink, however, the survey found proportions of self-reported heavier drinkers similar to those of most other groups. Here, too, the findings are in agreement with earlier research (Cahalan and Room 1974).

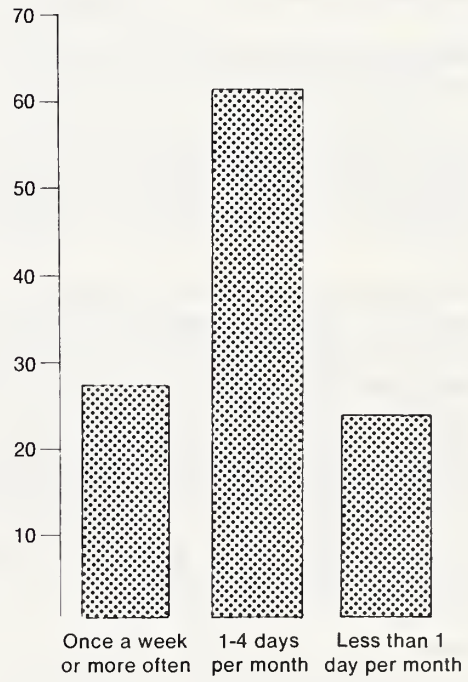
For other population subgroups, the numbers were simply too small to permit meaningful estimates. Future studies must be designed and executed with special sampling techniques if reliable information is to be developed concerning self-reported consumption in given subpopulations.

Self-Reported Consumption by Youths

Results from the national survey of 10th–12th graders have provided information on patterns of adolescent drinking (Rachal et al. in press). In general, the results for 1978 indicate that the proportion of 10th–12th graders who have used alcohol at some time has stabilized at a fairly high level. Eighty-seven percent reported ever having had a drink while 81 percent reported drinking in the year prior to the survey.

FIGURE 4

Percentages of 10th-12th Grade Drinkers by Frequency of Drinking



SOURCE: Rachal et al. (in press).

TABLE 3

Percentage of 10th-12th Graders in Each Volume of Drinking Group from 1978 National Survey

Drinking Group	Percentage
Abstainers—don't drink or drink less often than once a year.*	25.0
Infrequent drinkers—drink once a month at most and drink small amounts per typical drinking occasion.**	7.6
Light drinkers—drink once a month at most and drink medium amounts per typical drinking occasion or drink no more than three to four times a month and drink small amounts per typical drinking occasion.	18.8
Moderate drinkers—drink at least once a week and small amounts per typical drinking occasion or three to four times a month and medium amounts per typical drinking occasion or no more than once a month and large amounts per typical drinking occasion.	16.6
Moderate/heavier drinkers—drink at least once a week and medium amounts per typical drinking occasion or three to four times a month and large amounts per typical drinking occasion.	17.3
Heavier drinkers—drink at least once a week and large amounts per typical drinking occasion.	14.8
(*N*)	(4,918)

SOURCE: Rachal et al. (in press).

Note: Percentages are based on "weighted" observations.

*Those who drank less than once a year were classified as abstainers because the absolute alcohol consumed per day was essentially "0." Of those classified as abstainers above, 4.5 percent in 1974 and 4.0 percent in 1978 were "former drinkers"; i.e., they had had at least two or three drinks at some time in the past but not in the preceding year.

**Small, medium, and large amounts refer to one drink or less per drinking occasion, two to four drinks per drinking occasion, and five or more drinks per drinking occasion, respectively. A drink is equivalent to the following: 12 fluid ounces of beer, 4 fluid ounces of wine, or 1 fluid ounce of distilled spirits.

A substantial proportion of adolescents reported drinking fairly frequently. Data on frequency of drinking are shown in figure 4. As can be seen, over 20 percent of 10th–12th graders reported drinking once a week or more often. Other data indicated that over 8 percent reported drinking 3–4 days per week and nearly 2 percent reported drinking every day.

While prevalence and frequency measures are of interest, measures of volume of drinking are necessary to obtain a complete picture of adolescent drinking. By combining frequency and quantity of self-reported consumption, one can estimate volume of drinking.

In terms of volume of drinking, over half of the 10th–12th graders reported themselves to be abstainers (25 percent),[8] infrequent drinkers (7.6 percent), or light drinkers (18.8 percent). A substantial minority of 10th–12th graders reported themselves to be heavier drinkers (14.8 percent). Table 3 presents complete data for volume of drinking along with definitions of the different volume levels.

Almost without exception, studies of adolescent drinking have reported a relationship between volume of drinking and age. The 1978 national survey data for youths are consistent with these earlier findings. Drinking volume appears to increase rapidly at lower age levels. A

[8] While some persons categorized as abstainers did report having had a drink in the year prior to the survey, the amount consumed was so small that they were categorized as abstainers in this analysis.

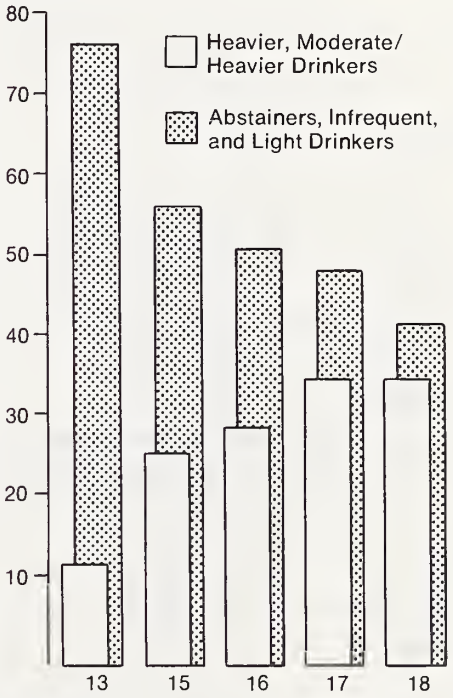
substantial number of youths in the 1978 survey reported themselves to have been drinking fairly large amounts by age 15. Heavier and moderate/heavier drinking increased to age 17 and then leveled off. While the percentages of abstainers and infrequent and light drinkers decreased with age, nearly one-half of the 18-year-olds reported volumes of drinking consistent with these categories, as seen in Figure 5.

With regard to sex differences, the 1978 survey results are consistent with previous survey findings of larger numbers of abstainers among adolescent females and larger numbers of heavier drinkers among males. While 1 in 5 10th- through 12th-grade males reported themselves to be heavier drinkers, 1 in 11 females reported heavier volumes of drinking.[9] Generally, the data indicate that adolescent females drink less often and in smaller amounts on typical drinking occasions. Approximately two out of three females reported themselves to be drinking at moderate levels or less. In contrast, one out of two males reported such volumes.

The 1978 national survey of adolescent drinking provided some information on self-reported consumption patterns for blacks and Hispanics. Consistent with other findings (Johnston et al. 1979), black 10th–12th graders reported a high abstention rate and a low heavier drinking rate. Black heavier drinking was reported as being one-third that of whites.

FIGURE 5

Percentages of Adolescent Drinkers in Selected Volume of Drinking Groups by Age



SOURCE: Rachal et al. (in press).

Note: Data for 13-year-olds are drawn from 1974 survey results by the same authors (Rachal et al. 1975). Data for all other ages are from 1978 survey results. Care must be taken in interpreting the rapid increase from age 13 to age 15 since the data are from two separate surveys conducted at different points in time.

Hispanics, while similar to whites in most self-reported volume of drinking categories, reported a lower heavier drinking rate. A complete picture of self-reported patterns of consumption among ethnic groups is shown in table 4.

Recent Trends in Self-Reported Consumption

The analysis of trends in self-reported consumption from survey data collected at different times is difficult. Problems involving varying definitions, instruments, procedures, and samples complicate most attempts to uncover changes in actual behavior over time.

For both the 1979 national survey of adults and the 1978 survey of adolescents, the similarities between recent and earlier surveys are sufficient to permit meaningful comparisons. In the case of the 1978 national survey of adolescents, the fit between recent and prior data is very good indeed since the 1978 survey had much in common with the 1974 national survey (Rachal et al. 1975).

For the 1979 national survey of adults, comparisons with earlier work are somewhat more complicated but are still possible. Since 1971, NIAAA has funded seven national surveys: Harris (1971, 1972, March 1973, October 1973, 1974); Opinion Research Corporation (June 1975, December 1975). An eighth survey, not funded by NIAAA, was conducted by Response Analysis Corporation (1976).

[9] Differences in body weights may complicate interpretation of adolescent male-female differences in volume of drinking.

TABLE 4

Percentages of 10th-12th Graders in Each Volume of Drinking Group by Ethnic Self-Classification

Drinking Group	Ethnic Self-Classification: Black	Spanish American	White Other*
Abstainer	36.1	21.1	21.1
Infrequent	12.1	20.5	7.4
Light	28.1	21.6	23.8
Moderate	11.3	17.5	18.0
Moderate/heavier	8.5	15.1	17.6
Heavier	3.9	4.2	12.2
(*N*)	(496)	(264)	(4,158)

SOURCE: Rachal et al. (in press).

*Includes those classifying themselves as American Indians (1 percent), Orientals (1 percent), or other (3.5 percent).

In 1977, Johnson et al. reanalyzed the data from these national surveys. The 1979 national survey of adults was similar enough to seven of the prior surveys to permit comparison of results with those obtained by Johnson et al. (1977).

As can be seen in tables 5 and 6, the data do not reveal any striking changes in self-reported consumption by adults for 1971–79. While Johnson et al. (1977) did note a trend toward increased heavier drinking among males and increased moderate drinking for females aged 35-49, these trends were not confirmed with the inclusion of 1979 data in the analyses.

TABLE 5

Trends in Alcohol Consumption by Type of Drinker, 1971-79 (in Percentages)

	Harris	Harris	Harris Spring	Harris Fall	Harris	Opinion Research Corp.	Response Analysis Corp.	National
	1971	1972	1973	1973	1974	1975	1976	1979
Type of Drinker								
Abstainer	36	36	34	37	36	36	33	33
Light	34	32	29	30	28	31	38	34
Moderate	20	23	23	21	28	21	19	24
Heavier	10	10	14	11	11	12	10	9
(*N*)	(2,195)	(1,544)	(1,588)	(1,603)	(1,578)	(1,071)	(2,510)	(1,772)

TABLE 6

Trends in Alcohol Consumption for Males and Females by Type of Drinker, 1971-79 (in Percentages)

Males								
Abstainer	30	28	25	26	24	27	26	25
Light	29	29	24	29	24	27	33	29
Moderate	26	28	29	26	34	26	24	31
Heavier	15	15	22	19	18	20	18	14
Females								
Abstainer	42	44	42	47	42	45	39	40
Light	40	34	35	32	32	35	44	38
Moderate	13	18	17	17	21	15	15	18
Heavier	5	4	6	4	5	4	3	4

SOURCE: Adapted from Johnson et al. (1977) by Clark and Midanik (in press).

Note: The percentages are weighted figures and may not total to 100 percent due to rounding; totals shown are the actual number of cases. Slight variations in these totals occur because of nonresponse, etc.

For adolescents, comparisons of data on self-reported consumption for 1974 and 1978 do not show substantial changes in either the percentage of adolescents who drink or in the volume of drinking.

With regard to adolescent heavier drinking, the percentages for 1974 and 1978 were virtually identical. Complete data for both years are presented in table 7.

Male and female comparisons for 1974 and 1978 suggest that male adolescent drinking is becoming similar to female drinking rather than vice versa. As the data in table 8 indicate, fewer males appear in all drinking groups for 1978 compared with 1974 and an increase of 7 percent for males reporting abstinence is apparent. Males, however, continue to outnumber females in the heavier drinking group by a substantial margin.

TABLE 7

1974 and 1978 National Surveys: Percentages of Respondents in Each Volume of Drinking Group

Group Description	1974 Study: Grades 7-12	1974 Study: Grades 10-12	1978 Study: Grades 10-12
Abstainers—don't drink or drink less often than once a year.*	27.3	19.4	25.0
Infrequent drinkers—drink once a month at most and drink small amounts per typical drinking occasion.**	16.3	11.2	7.6
Light drinkers—drink once a month at most and drink medium amounts per typical drinking occasion *or* drink no more than three to four times a month and drink small amounts per typical drinking occasion.	16.6	18.5	18.8
Moderate drinkers —drink at least once a week and small amounts per typical drinking occasion orthree to four times a month and medium amounts per typical drinking occasion or no more than once a month and large amounts per typical drinking occasion.	15.5	17.3	16.6
Moderate/heavier drinkers—drink at least once a week and medium amounts per typical drinking occasion *or* three to four times a month and large amounts per typical drinking occasion.	13.7	18.7	17.3
Heavier drinkers—drink at least once a week and large amounts per typical drinking occasion.	10.6	14.9	14.8
(*N*)	(13,122)	(5,935)	(4,918)

SOURCE: Rachal et al. (in press).

Note: Percentages are based on "weighted" observations.

*Those who drank less than once a year were classified as abstainers because the absolute alcohol consumed per day was essentially "0." Of those classified as abstainers above, 4.5 percent in 1974 and 4.0 percent in 1978 were "former drinkers"; i.e., they had had at least two to three drinks at some time in the past but not in the preceding year.

**Small, medium, and large amounts refer to one drink or less per drinking occasion, two to four drinks per drinking occasion, and five or more drinks per drinking occasion, respectively. A drink is equivalent to 12 fluid ounces of beer, 4 fluid ounces of wine, or 1 fluid ounce of distilled spirits.

TABLE 8

Percentage of 10th–12th Graders for Each Volume of Drinking Group by Sex

	1974 Study			
Drinking Level	Males	Females	Males	Females
Abstainer	15.5	23.3	22.7	27.3
Infrequent	8.1	14.2	6.2	9.1
Light	16.0	20.9	15.7	22.0
Moderate	17.0	17.5	15.8	17.4
Moderate/heavier	21.7	15.7	18.8	15.7
Heavier	21.7	8.4	20.9	8.9
(*N*)	(2,820)	(3,115)	(2,276)	(2,642)

SOURCE: Rachal et al. (in press).

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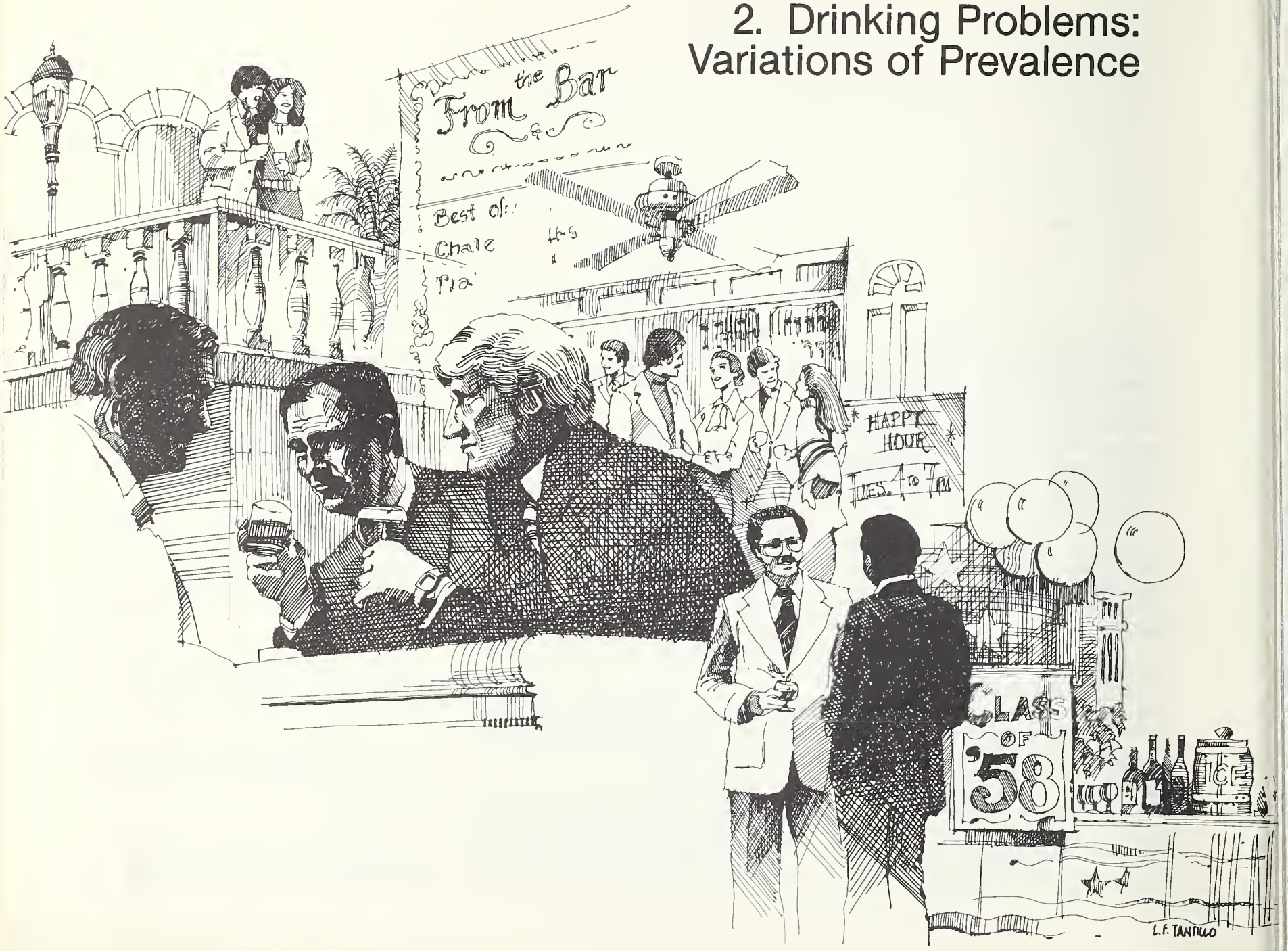
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2. Drinking Problems: Variations of Prevalence



While the majority of American drinkers appear to consume alcoholic beverages without problems, a substantial minority do experience difficulties. These alcohol-related problems[1] are numerous and vary considerably with regard to type, course, severity, frequency, and duration.

For some persons, the types of problems reported appear consistent over time. For others inconsistency is apparent, with one type of problem reported on one occasion and a different type of problem reported on other occasions (Polich et al. 1980). For still other persons, problems associated with drinking may be reported at particular ages or in certain situations but may not be reported at later ages or in different situations (Cahalan et al. 1969; Roizen et al. 1978).

These many variations in alcohol-related problems suggest that no single concept will suffice for adequate description. Categories such as alcoholism, alcohol abuse, alcohol dependence, problem drinking, and alcohol-related disabilities are of definite although limited value. Each is useful for certain purposes and for certain populations, but none can represent adequately the full range of problems associated with alcohol consumption in American society.

[1] The term *drinking problems* as used throughout this chapter refers to self-reports of behaviors or characteristics often reported to accompany alcohol dependence symptoms, adverse effects of drinking, and volume of consumption of ethanol in response to survey instruments. It is not synonymous with either problem drinking or alcoholism.

A Dimensional Approach to Drinking Problems

While variations in drinking problems exist and complicate efforts to estimate prevalence, reasonably satisfactory solutions to the difficulties posed by such variations have been advanced. One such approach is to represent drinking problems in terms of three major dimensions (Polich and Orvis 1979). These dimensions are (1) alcohol dependence, (2) adverse effects, and (3) alcohol consumption.

Alcohol dependence refers to the presence of physical dependence and loss of control.

Adverse effects are defined in terms of negative consequences of consumption other than physical dependence and include physical diseases and psychological and social impairment.

Heavier alcohol consumption is defined in terms of the quantity of ethanol consumed over given periods of time.

Although relationships between these dimensions do exist at the empirical level, it is important that conceptual distinctions be maintained. In effect, the dimensional approach suggests that a "drinking problem" can be defined in terms of any one *or* any combination of three dimensions.

In the following discussion, an effort has been made to maintain these important conceptual distinctions concerning these dimensions of drinking problems and methods of investigation. At the conclusion of the chapter, empirical relationships among the dimensions will be examined.

The 1979 National Survey of U.S. Adults

In chapter I, results for self-reported consumption from the 1979 national survey were discussed (Clark and Midanik in press). The 1979 national survey also provided estimates of drinking problems through self-reports concerning alcohol dependence, adverse social effects, and alcohol consumption. Scales for these dimensions are discussed separately below.

Alcohol Dependence and Loss of Control Scales.

Data concerning this dimension were gathered from responses to questions concerning behaviors and characteristics associated with alcohol dependence: (1) skipping meals when drinking, (2) sneaking drinks, (3) morning drinking, (4) drinking before a party to get enough, (5) blackouts, (6) gulping drinks, (7) hands shaking after drinking, and (8) morning drinking to get rid of a hangover.

A subset of items often reported to be associated with measurement of loss of control and alcohol dependence was also used. These additional items were as follows: (9) fear that one was an alcoholic, (10) attempting to cut down or quit drinking but failing to do so, (11) sometimes continued drinking after promising not to, and (12) finding it difficult when drinking to stop before becoming completely intoxicated.

Adverse Social Effects Scale.

The 1979 national survey emphasized measurement of reports of social rather than physical effects of drinking. A social consequences scale was employed and yielded self-reports concerning the following adverse social effects of drinking:

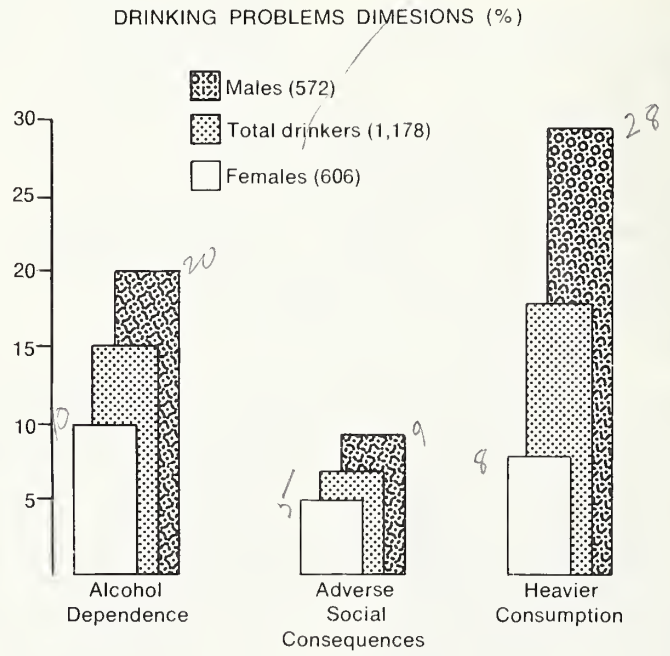
1. Relationship problems (a spouse, friend, or relative either threatened to break off the relationship or actually did so; advice from friends to cut down on drinking);

2. Police problems (respondent was either questioned or warned about drinking by police; arrests for drunkenness or driving while intoxicated were also included);

3. Automobile and other accidents (involvement in accidents in which personal injury or property damage occurred);

FIGURE 1

Results for Low Cutting Points on Three Dimensions of Drinking Problems for Drinkers Only in the U.S. Adult Population by Sex from 1979 National Survey



SOURCE: Data were adapted from Clark and Midanik (in press).

Note: Criteria for the low data cutting points were as follows:
Alcohol Dependence: Two or more affirmative responses to items 1-8, or more or more affirmative responses to items 9-12. Data are for events in prior 12 months.
Adverse Social Consequences: One or more events in prior 12 months.
Heavier Consumption: 60 or more drinks per month.

4. Job problems (job loss or near loss because of drinking; advice from people in the workplace to cut down; loss of raises, promotions, or better jobs).

Alcohol Consumption Scale.

The 1979 national survey provided information on consumption on a monthly basis.

Results for Dimensions of Drinking Problems Using Relatively Lower Data Cutting Points

A variety of measures and data cutting points were used in the 1979 national survey for different analyses. Separate analyses were conducted using lower data cutting points and higher cutting points (see figure 1 for actual values). The lower cutting points were intended to provide information on the distribution of drinking problems in the general population. These results for lower cutting points, discussed first, cannot be taken as estimates of the prevalence of either problem drinking or alcoholism.

When self-reports of behaviors and characteristics often associated with alcohol dependence were examined, approximately 15 percent of those who were drinkers reported experiencing such problems during the 12 months prior to the survey (see figure 1). Twenty percent of the male drinkers and 10 percent of the female drinkers reported behaviors and characteristics associated with alcohol dependence or loss of control. Nine percent of the male drinkers reported adverse social consequences as did 5 percent of the female drinkers. With regard to heavier alcohol consumption, 18 percent of the drinkers reported consumption in excess of 60 drinks per month. Twenty-eight percent of the drinkers were heavier drinking males while 8 percent of the drinkers were heavier drinking females.

Figure 1 gives results for drinkers only for low data cutting points on the drinking problems dimensions.

As the results in figure 1 indicate, a substantial minority of drinkers reported having experienced drinking problems in the 12 months prior to the survey. Consistent with most other survey data, males exceeded females on all drinking problems dimensions. They reported more symptoms of alcohol dependence or loss of control, more adverse social consequences, and heavier consumption than did females.

The 1979 national survey data showed clear relationships with regard to age. For both sexes, reports of drinking problems decreased with age, with the highest percentages reported for the 18- to 20-year age group.

As mentioned in chapter 1, the 1979 national survey provided some information on drinking patterns among members of selected minority groups. Self-reports of drinking problems indicated that Hispanic groups of both sexes, but especially males, reported relatively high levels of heavier drinking and of problems associated with drinking. And while blacks of both sexes showed relatively high abstention rates, among blacks who reported drinking, the proportions of heavier drinkers and of drinkers with alcohol-related problems were similar to the proportions for most other groups.

Drinking Problems Among Adolescents

Recent studies of the prevalence of drinking among adolescents indicate that alcohol is the most widely used drug among American youth (Abelson et al. 1977; Johnson et al. 1977). The 1978 national survey of 10th–12th graders discussed in chapter 1 led to the same conclusion but provided further information on drinking problems (Rachal et al. in press).

In the 1978 national survey, drinking problems among adolescents were defined in terms of two dimensions: alcohol consumption and adverse social consequences. Alcohol consumption was measured by two methods. In the first method, a volume of drinking index was derived from questions concerning frequency and quantity consumed on a typical drinking occasion. By this method, 14.8 percent of the sample reported themselves to be heavier drinkers.[2]

The second method employed by Rachal et al. (in press) to estimate alcohol consumption was self-reported frequency of drunkenness. Respondents were asked, "During the last year, about how many times have you gotten drunk or very, very high?" Approximately 31 percent of 10th–12th graders reported drunkenness at least six times in the year prior to the survey.

Adverse social consequences were concerned with self-reports in the following five areas:

1. Trouble with teachers or principal because of drinking;
2. Difficulties with friends because of drinking;
3. Driving after having had a good bit to drink;
4. Criticism of respondent's drinking by a date;
5. Trouble with the police because of drinking.

Two percent of the sample reported negative consequences two or more times in the year prior to the survey.

TABLE 1

Percentages of 10th–12th Graders Classified as Misusers Due to Drunkenness, Adverse Social Consequences, or Both

Misuser Criteria	Percentage
Drunkenness	93.3
Negative consequences	1.2
Drunkenness and adverse social consequences	5.5
(*N*)	(1,396)

SOURCE: Rachal et al. (in press).

Rachal et al. (in press) combined frequency of drunkenness with adverse social consequences in order to develop an index of alcohol misuse.[3] When "alcohol misuse" was defined as drunkenness at least six times in the past year, *or* negative consequences two or more times in the past year in at least three of the five social areas, 31.2 percent of the sample were categorized as "alcohol misusers." However, as the data in table 1 show, the alcohol misuser category is accounted for largely by self-reported drunkenness.

In general, the 1978 national survey data for 10th–12th graders indicated that more males (37.8 percent) than females (25.5 percent) reported alcohol misuse. Increases in alcohol misuse with age were reported for males but not for females. Black and Hispanic males were ranked substantially lower in self-reported misuse compared with white males (and others). Black and Hispanic females showed the lowest levels of self-reported misuse. Except for females of lower socioeconomic status who were relatively low in self-reported misuse, no substantial socioeconomic status relationships were apparent (Rachal et al. in press).

[2] Heavier drinkers were defined as those who drank at least once a week and five or more drinks per drinking occasion. A drink was equivalent to 12 fluid ounces of beer, 4 fluid ounces of wine, or 1 fluid ounce of distilled spirits.

[3] While alcohol misuse as defined here is considered one indicator of a drinking problem, it must be interpreted with caution since self-reported "drunkenness" is to some extent arbitrary and subjective. Alcohol misuse is not synonymous with the term "drinking problem" and "alcohol misuser" is not synonymous with the term "problem drinker."

Trends in Prevalence of Drinking Problems

In general, analyses of recent trends do not reveal substantial changes in the prevalence of drinking problems for U.S. adults (Clark and Midanik in press). With regard to the drinking problems dimension of heavier drinking, inclusion of 1979 national survey data in a trend analysis involving seven prior surveys for the period 1971–76 did not reveal a significant trend.

The use of different measuring instruments makes comparisons of data across the surveys difficult. The 1979 national survey, however, was comparable with four earlier surveys with regard to three important symptoms of drinking problems. An examination of changes in these problems did not reveal significant trends when 1979 national survey data were compared with data from four surveys conducted for the period 1973–75. The three symptoms were (1) gulping drinks, (2) taking a drink in the morning, and (3) forgetting what one did while drinking. The problem rate for drinkers reporting any of these symptoms was 23 percent in the 1979 national survey. This rate was consistent with rates for similar symptoms selected from a larger set of symptoms used in the four prior surveys as reported by Johnson et al. (1977).

While comparisons of 1979 national survey data with survey data for 1973–76 do not reveal trends, comparisons with earlier years might. Examination of national survey data on drinking problems gathered in 1967 (Social Research Group 1967) indicates differences on some dimensions of drinking problems but not on others. Differences between 1967 and 1979 were not apparent for any of the following adverse consequences of drinking: health problems, belligerence, problems with friends, job problems, police problems, binge drinking, and problems with spouse.

With regard to reports of symptomatic drinking, however, differences were noted, particularly for males. In 1967, 11 percent of the males reported symptomatic drinking and in 1979, 20 percent of the males did so. Reports by females of symptomatic drinking showed an increase of 4 percent (3 percent to 7 percent). Symptomatic drinking was defined in terms of signs of alcohol dependence, and included such signs as difficulty in stopping drinking, experiencing blackouts, drinking to get rid of a hangover, sneaking drinks, skipping meals while drinking, and drinking before a party to insure getting enough alcohol.

In general, however, analyses of trends for U.S. adults over the past decade, and certainly since publication of the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978), do not reveal marked changes in drinking problems.

With regard to trends in prevalence of drinking problems among youths, the data appear to be similar to those for adults. Comparisons between 1974 and 1978 national survey data do not reveal striking changes in drinking problems for 10th–12th graders (Rachal et al. in press). However, the data for 1979 do show a small but probably reliable decrease in adverse social consequences of drinking (3.4 percent to 2.1 percent) and an increase of self-reported drunkenness of at least six times per year (24 percent to 29 percent).

Relationships Among Drinking Problems Dimensions

Throughout this discussion of prevalence of drinking problems, distinctions have been maintained between and among three major dimensions: alcohol dependence, adverse consequences, and alcohol consumption. Empirical relationships among these indicators of drinking problems have been examined (Polich and Orvis 1979).

Dependence Symptoms and Consumption

In the context of a study of alcohol problems among U.S. Air Force personnel, Polich and Orvis (1979) investigated the relationships between various indicators of drinking problems. For dependence symptoms and consumption, a substantial correlation was found. Dependence occurred at a rate of 1.3 percent for those reporting very low consumption (less than 1 ounce of ethanol per day) and rose to 47.7 percent for those with consumption levels over 5 ounces of ethanol per day.

Of the 155 persons in the sample who were classified as alcohol dependent, 86 percent reported consuming eight or more drinks per day. The remaining 14 percent reported frequent intoxication or other deviant drinking. As the data in table 2 indicate, among alcohol-dependent persons, deviant drinking defined in terms of high amounts, frequent intoxication, or other deviant patterns was universally present.

TABLE 2

Consumption Patterns Among Alcohol-Dependent Persons

Consumption Pattern Reported	Number of Cases	Percentage of Alcohol-Dependent Cases
High amount of drinking[a]	134	86.4
Frequent intoxication, without high amount of drinking reported[b]	17	11.0
Other deviant drinking[c]	4	2.6
(*N*)	(155)	(100.0)

SOURCE: Adapted from Polich and Orvis (1979).

[a] Consumption of 4 ounces of ethanol (eight or more drinks) at least once per month.

[b] Being drunk or sick from drinking at least once per month.

[c] In two cases, being "high" on duty at least 15 days in the past year. In two other cases, reports of infrequent events (one to six times in the past year) from at least four of the following areas: consuming eight or more drinks in one day, being drunk, being sick from drinking, skipping meals because of drinking, and driving just after consuming five or more drinks.

TABLE 3

Relations Among Alcohol Dependence Symptoms

	Tremors	Morning Drinking	Inability To Stop Drinking	Blackouts
Tremors	—	0.590	0.694	0.524
Morning drinking	0.405	—	0.450	0.485
Inability to stop drinking	0.518	0.551	—	0.523
Blackouts	0.691	0.722	0.719	—

SOURCE: Adapted from Polich and Orvis (1979).

Note: Above the diagonal the entry is the product-moment correlation. Below the diagonal the entry is the proportion of people reporting the column variable who also reported the row variable (base $N = 2,882$).

Alcohol dependence was defined in terms of four indicators: tremors (shakes), morning drinking, inability to stop drinking, and blackouts. As can be seen in table 3, correlations involving these indicators were substantial.

Adverse Effects and Consumption

Fourteen types of serious incidents were measured in the Polich and Orvis study of U.S. Air Force personnel (1979). Including such things as official punishment, illness lasting 1 week, accidents, driving while intoxicated, arrests, and so forth, these serious incidents were grouped in one of three categories: work impairment, physical damage, or social disruption. The data indicated a strong positive relationship between level of consumption and serious incidents. The probability of experiencing a serious incident rises from 6.5 percent at the lowest consumption level to 52.2 percent at the highest consumption level (over 5 ounces of ethanol per day).

Patterns of Consumption

The Polich and Orvis (1979) results indicate that level of consumption is related substantially to both alcohol dependence and adverse effects; the higher the level of consumption, the greater the probability that a person will experience dependence symptoms and adverse physical and social consequences. A similar conclusion concerning level of consumption was reached in the analyses of data from the 1979 national survey and from a 1967 survey (Clark and Midanik in press). For both 1979 and 1967 survey results, a positive relationship was noted between problems reported and volume of alcohol consumed.

A focus on level of consumption, however, may obscure the possibility that dependence symptoms and adverse effects are both related to consumption but in different ways. These differences may become apparent only when patterns of consumption are examined.

When frequency of consumption is considered along with level of consumption, two consumption patterns are apparent: (1) regular heavy drinking and (2) intermittent heavy drinking. While regular heavy drinking appears to be related to both adverse consequences and dependence, intermittent heavy drinking may result in adverse consequences only (Polich and Orvis 1979).

For consumption levels of six drinks per day or less, Polich and Orvis observed alcohol dependence rates lower than 10 percent. However, when consumption rose above six drinks a day, rates for self-reported alcohol dependence symptoms increased sevenfold. On the other hand, adverse effects were reported with substantial frequency (17.7 percent rate) among those who reported drinking as little as one or two drinks per day (provided that they also reported heavy consumption at least once per month).

Problems in Estimating Prevalence Rates for Problem Drinking and Alcoholism

Estimating prevalence rates for problem drinking and clinical alcoholism from survey data concerning various dimensions of drinking problems is neither simple nor straightforward. A number of methodological difficulties complicate estimation procedures. Household sampling techniques may underrepresent persons experiencing either alcoholism or serious problem drinking. Moreover, inaccuracies in response to survey instruments are likely for all three dimensions of drinking problems, particularly persons experiencing more serious alcohol-related difficulties. The magnitude or frequency of such inaccuracies is not yet known and may vary from survey to survey.

Estimation of prevalence rates for problem drinking and alcoholism is also complicated by problems of definition. Prevalence rates for these categories of drinkers can and do vary in accord with differences in concepts and definitions. For the most part, these differences in concepts and definitions center on the relative importance various investigators assign to one or another of the three dimensions of drinking problems discussed throughout this chapter. Three examples are provided below.

The single-distribution model (Schmidt and Popham 1978) concentrates on consumption only and focuses upon the substantial aggregate correlations between cirrhosis mortality rates and mean per capita ethanol consumption in many populations. In this model, there is no sharp discontinuity between alcoholics and other types of drinkers.

The National Council on Alcoholism/American Medical Society on Alcoholism (1976) definition stresses physical dependency, tolerance, and adverse physical effects:

Alcoholism is a chronic, progressive, and potentially fatal disease. It is characterized by tolerance and physical dependency or pathological organ changes, or both—all the direct or indirect consequences of the alcohol ingested.

The most recent World Health Organization (1977) definition of the alcohol dependency syndrome emphasizes the "compulsion to take alcohol on a continuous or periodic basis in order to experience its psychic effects, and sometimes to avoid the discomfort of its absence."

Besides problems involving research methodology, concepts, and definitions, estimation of prevalence rates is further complicated by variations in criteria for category inclusion. Even if investigators were to reach a consensus on the relative importance of the various dimensions of drinking problems as indicators of alcoholism or problem drinking, disagreement over criteria values in actual data would still need to be resolved. For consumption, agreement on the meanings to be attached to various levels and patterns of consumption would be necessary. For alcohol dependence symptoms, agreement as to the number of symptoms and the relative importance of each would be necessary. And for adverse effects, investigators would need to agree upon the number and nature of such effects necessary for consistent classification of individuals to be achieved.

A consideration of these issues involving methods, concepts, definitions, and criteria for category inclusion reveals that the epidemiology of alcoholism and of problem drinking is neither exact nor characterized by consensus. Despite these caveats, however, it is apparent that reasonable approximations can be made and increased agreement achieved. These approximations might contribute to the development of methods for estimating the number of persons at varying levels of risk for the development of either alcoholism or problem drinking.

Adults at Risk for Alcoholism and Problem Drinking

The 1979 national survey results discussed earlier in this chapter indicated that when data cutting points were set low, fairly large proportions of adult Americans reported experiencing one or more of the three drinking problems surveyed (Clark and Midanik in press). Twenty percent of male drinkers and 10 percent of female drinkers reported experiencing some symptoms of alcohol dependence in the year prior to the survey. For one or more adverse social consequences, the percentages were 9 percent for male drinkers and 5 percent for female drinkers. And when heavier consumption was defined as 60 or more drinks per month, 28 percent of the male drinkers and 8 percent of the female drinkers reported drinking at this level.

As Clark and Midanik (in press) suggested, these results for low cutting points on the various drinking problems dimensions cannot be taken as indicators of either clinical alcoholism or problem drinking. The results, however, do indicate that various drinking problems are reported by a substantial number of adults, many of whom can be considered to be at some level of risk for the development of more enduring and pervasive drinking problems.

In order to study the people reporting more serious levels of problems, Clark and Midanik (in press) raised their data cutting points on two dimensions. When heavier consumption was defined as 120 or more drinks per month rather than 60 or more drinks per month, 15 percent of adult male drinkers and 3 percent of adult female drinkers reported drinking at this level. When alcohol dependence was defined as reports of three or more symptoms rather than two or more, 5 percent of the male drinkers and 2 percent of the female drinkers reported the higher levels of dependence symptoms.

While Clark and Midanik (in press) did not consider these results in terms of increased risk for the development of either problem drinking or alcoholism, the 1979 national survey data might be interpreted as follows.

- If only the level of consumption is considered, 15 percent of adult male drinkers are drinking at levels that indicate substantial risk for the development of either alcoholism or serious problem drinking.
- If only the level of consumption is considered, 3 percent of adult female drinkers are drinking at levels that indicate substantial risk for the development of alcoholism or serious problem drinking. This percentage, however, is not corrected for body weight differences between males and females.
- If only alcohol dependence behaviors and characteristics are considered, 5 percent of the male drinkers and 2 percent of the female drinkers are experiencing symptoms that indicate substantial risk for development of alcoholism or serious problem drinking. These results must be regarded tentatively because household surveys may not accurately reflect the number of alcoholics. Therefore, the results reported here can be viewed as suggestive of the numbers of persons in the general population at substantial risk for the development of alcoholism. However, they cannot be viewed as prevalence rates for actual clinical alcoholism.
- Finally, with regard to adverse social consequences, the 1979 national survey data suggest that 9 percent of male drinkers and 5 percent of female drinkers are at substantial risk for the development of alcoholism or serious problem drinking.

Prevalence Rates for Alcoholism and for Problem Drinking

While the 1979 national survey results have provided information concerning persons in the general population at risk for serious alcohol problems, the survey of U.S. Air Force personnel (Polich and Orvis 1979) yielded information that may be useful in discriminating between alcoholism and problem drinking.

If alcohol dependence is taken as the principal indicator of alcoholism, Polich and Orvis' results are of interest. Nearly 5 percent of the sample reported experiencing symptoms of alcohol dependence at least once a week. While females were present in the sample, the majority of persons surveyed were male (92.6 percent). Table 4 shows the results for the entire range of frequencies of reported dependence symptoms.

While alcohol dependence has been construed traditionally as the principal indicator of clinical alcoholism, adverse consequences of drinking *in the absence of dependence* may be considered a reasonable indicator of problem drinking.[4] Polich and Orvis (1979) reported that 4.6 percent of Air Force personnel may be classified as dependent on alcohol and an additional 9.3 percent may be classified as not dependent upon alcohol but having experienced at least one serious adverse consequence of drinking in the year prior to the survey. Polich and Orvis concluded that in a given year approximately 14 percent of Air Force personnel experience a serious alcohol problem.

Of course, given population differences between military personnel and civilians, Polich and Orvis' findings, uncorrected for demographic characteristics, cannot be generalized to the general U.S. population. As these authors pointed out, members of the military services are largely male, younger, less likely to be married, and more likely to be located overseas. As a consequence, prevalence rates for the military are likely to be higher than for civilian groups. However, the results do indicate the serious nature of alcohol problems among this substantial subgroup of the American adult population.

In general, results from these recent surveys indicate that a substantial number of adult American drinkers experience serious drinking problems. Males continue to outnumber females by a fairly wide margin on most indicators of drinking problems. The *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978) estimated that 10 percent of U.S. drinkers can be considered to be problem drinkers. Results from recent surveys are essentially consistent with this estimate.

TABLE 4

Frequencies of Self-Reported Alcohol Dependence Symptoms

Approximate Annual Frequency of Symptom Days	Percentage of Sample
None	73.0
Less than once per month	18.4
Once per month, less than twice	1.1
Two or three times per month	2.6
Once per week	0.6
Two or three times per week	1.5
Every other day	1.3
Every day or more often	1.5
(*N*)	(3,148)

SOURCE: Adapted from Polich and Orvis (1979).

Note: Symptoms were tremors, morning drinking, inability to stop drinking, and blackouts.

[4] It is important to note that not all persons would agree with this distinction. For some persons, adverse consequences alone are an indicator of alcoholism. Others argue that dependence symptoms are in essence an alternative way to measure heavier consumption and do not indicate an enduring entity called "clinical alcoholism."

Criteria for Assessing Problem Drinking Among Adolescents

In attempting to arrive at meaningful conclusions concerning the extent of problem drinking among adolescents, it is important to note that adolescent drinking and adult drinking cannot be judged from a single set of standards. A given quantity of alcohol or the frequency with which it is consumed is likely to have a differential impact upon individuals at various maturational and developmental levels. Adolescence is a period of much growth and development of cognitive, social, and physical skills. For many adolescents, such skills are only recently established ones. Such skills in adolescents are vulnerable to disruption by quantities of alcohol lower than those necessary to produce similar changes in adults. For example, it has been noted that adolescents become involved in fatal automobile crashes at blood alcohol concentrations significantly lower than those found in adults involved in similar accidents (Carlson 1972; Waller 1972; Zylman 1972).

Adolescence is traditionally construed as a period of much new learning. Not only must recently acquired skills be solidified but changing external circumstances require the continuous acquisition of new cognitive, social, and physical skills. The significance of any pattern of consumption of alcohol must be construed in terms of its potential impact on new skills acquisition and ongoing maturational processes.

In effect, problem drinking among adolescents cannot be assessed by the same criteria used to assess adult alcoholism or problem drinking. Alcohol-related diseases, classical symptoms of alcohol dependence, and many of the adverse consequences that occur in adult alcoholics are reported infrequently in adolescent populations.[5] Moreover, frequency of adolescent drinking may not be as big a problem as quantity consumed on a given occasion (Harford and Mills 1978). For example, only 1.8 percent of 10th–12th graders reported themselves to be daily drinkers (Rachal et al. in press). While frequency of drinking rises gradually with age well into the adult years, by age 16–17 the mean number of drinks consumed on each occasion rises to a total of nearly six drinks for males and more than four drinks for females, and then declines. Given the fact that much adolescent drinking takes place away from home, in or around cars, and prior to driving, this aspect of adolescent drinking is indeed troublesome. Data for 1978 (National Safety Council 1980) indicate that drivers under age 20 were involved in 11,500 crashes with at least one fatality. Also, in 1978 there were 5.6 million reported traffic accidents caused by young drivers (15–20 years old).

[5] This statement does not mean that symptoms of alcoholism are not found among adolescents. While such symptoms are reported infrequently in surveys, adolescents showing symptoms of clinical alcoholism are admitted to treatment. The distribution of these persons in the general population, however, is unknown.

Considerable justification exists for assigning a central role to heavier consumption as an indicator of adolescent problem drinking. Considering heavier consumption alone, and using the definition of heavier consumption developed by Rachal et al. (in press), approximately 15 percent of 10th–12th graders and approximately 11 percent of 7th–12th graders might be classified as problem drinkers on the basis of self-reports These are the percentages of students reporting a regular consumption pattern of drinking at least once a week and five or more drinks on each drinking occasion.

Among 10th–12th graders, male problem drinkers (20.9 percent) outnumber female problem drinkers (8.9 percent). As for ethnic self-classification, many more whites (12 percent) than Hispanics (4 percent) or blacks (4 percent) are classified as problem drinkers in terms of heavier consumption patterns alone.

It is appropriate to close this discussion of problem drinking among adolescents with a caveat. On any given day, approximately 20 percent of the school population is absent (Rachal et al. in press). It is quite possible that a disproportionate number of problem drinkers are absentees and that, as a consequence, school-based survey data underestimate prevalence.

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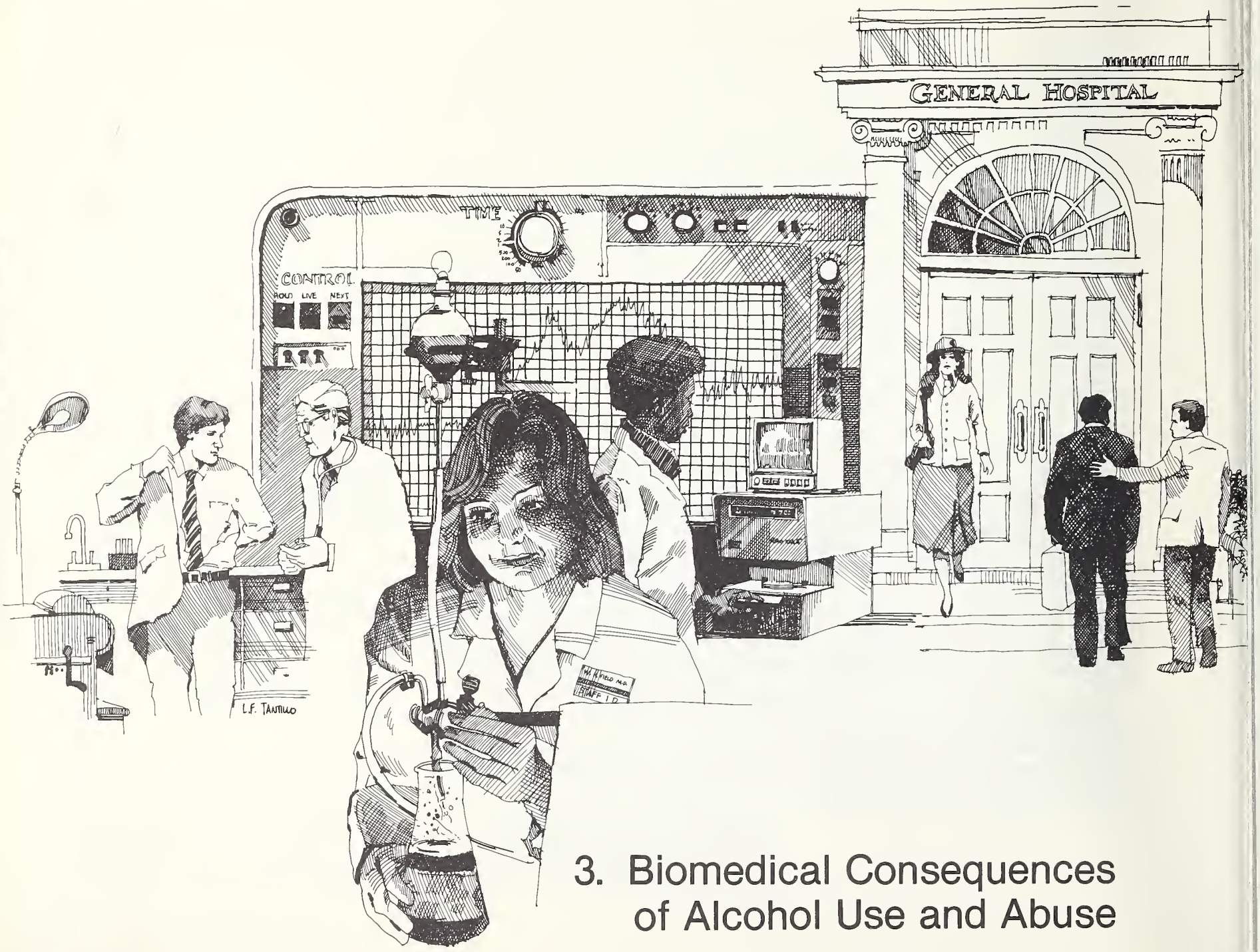
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3. Biomedical Consequences of Alcohol Use and Abuse

This chapter highlights selected major developments in research on the biomedical effects of alcohol ingestion and is not meant to be a comprehensive review of the subject. The reader who wishes a more detailed review is referred to the recent *Report to the President and the Congress on Health Hazards Associated with Alcohol and Methods To Inform the General Public of These Hazards* (1980), produced jointly by the U.S. Department of the Treasury and the U.S. Department of Health and Human Services.

In this chapter particular emphasis is placed on topics that were not extensively covered in the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978). Thus considerable attention is paid to the cardiovascular effects of alcohol, reflecting the increased interest in that research area since the *Third Special Report* was published. Similar emphasis is placed on the effects of alcohol on the male endocrine system and on brain structure and function.

Alcohol-Related Morbidity and Mortality

Alcohol-related mortality for several selected causes appears to be remaining relatively constant in the United States (Malin et al. in press). An interesting finding is that cirrhosis mortality rates have declined each year since reaching a peak in 1973 (figure 1).

Males still far outnumber females in the measurable use and abuse of beverage alcohol (see chapters 1 and 2). Alcohol-related discharges for males from short-stay hospitals are more than triple those for females, even though males account for only 40 percent of all short-stay hospital discharges (Malin et al. in press).

Cirrhosis mortality rates are disproportionately high among black Americans, particularly in the seven major cities that account for half of the cirrhosis deaths among blacks (Baltimore, Chicago, Detroit, Los Angeles, New York, Philadelphia, and Washington). Rates among black males, aged 25 to 34, in these cities are as much as 10 times higher than for white males of the same age. For all ages, the cirrhosis mortality rate for black Americans is nearly twice that for white Americans (Malin et al. in press).

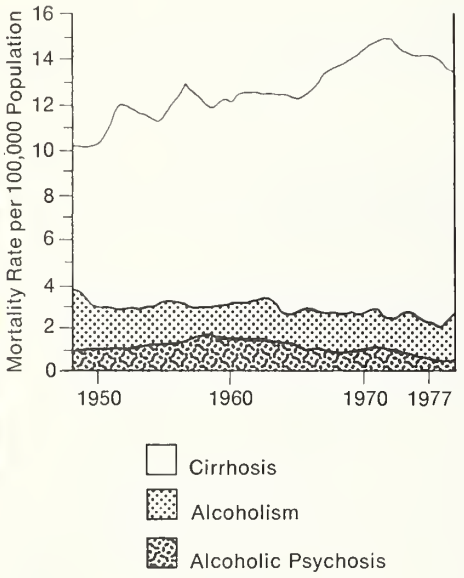
Polich et al. (1980) reported the actual mortality rate of a cohort group of alcoholics to be 2.5 times greater than expected at 4 years following admission to a treatment program. The mortality rates were also elevated to a higher degree for younger alcoholics than for older ones. When the deaths were analyzed for underlying cause, 57 percent of the deaths in the cohort were related, or were probably related, to alcohol.

While alcohol-related morbidity data are limited in scope and quality, some information is available from the National Center for Health Statistics Hospital Discharge Survey (HDS)(U.S. Department of Health, Education, and Welfare 1975). The estimated number of alcoholism discharges increased from 424,000 in 1975 to 464,000 in 1977. With an average length of stay of nearly 8 days, cases with a primary diagnosis of alcoholism accounted for more than 3 million bed-days of inpatient utilization. The rates of utilization have increased more sharply for males than for females.

The Hospital Discharge Survey collects information from a sample of nonmilitary, non-VA, noninstitutional short-stay hospitals. The multistage probability sample frame takes into account hospital size, type of ownership, and region of the country. More than 400 out of 7,000 hospitals are included in the survey. The information on the discharge summary abstract is coded, using up to five conditions mentioned on the discharge summary. Since the unit of analysis is a hospitalization, and the individual is not identified, there could be repeated discharges of the same person. On the

FIGURE 1

Trends in Selected Mortality Rates in the United States, 1949-1978



SOURCE: Data from National Center for Health Statistics.

other hand, the HDS probably underestimates, perhaps seriously for some diagnoses, the occurrence of alcohol-related events that result in hospitalization. American society still tends to stigmatize alcohol-related difficulties so that patients may minimize or conceal the involvement of alcohol in their disease or injury. Furthermore, even if physicians are aware of the involvement of alcohol, they may be reluctant to report it in a hospital discharge summary record.

At least 910,000 discharges (2.5 percent of all discharges) from short-stay hospitals in 1975 had at least one diagnosis for an alcohol-related cause (table 1). Of these, 424,000 discharges had first-listed diagnoses of "alcoholism" (ICDA Code 303). An additional 124,000 discharges had first-listed diagnoses of liver cirrhosis or alcoholic psychosis. The remaining 362,000 alcohol-related discharges included neuroses, symptomatic and chronic ischemic heart disease, gastritis, duodenitis, diseases of the pancreas and liver, diabetes, pneumonia and other respiratory diseases, esophageal varices, vitamin deficiencies, trauma and other injuries—all as first-listed diagnoses accompanied by alcohol-related diagnoses.

In Veterans Administration hospitals, the proportion of alcohol-related discharges to all discharges was much higher (Malin et al. in press). For example, 17 percent of all discharges from VA hospitals were associated with alcoholism as a primary or secondary diagnosis. Between 1970 and 1977 the number of alcohol discharges from VA hospitals nearly doubled, from 53,396 to 101,342.

Alcohol and Cardiovascular Disorders

Investigation of the cardiovascular effects of alcohol has accelerated as researchers and clinicians have become increasingly aware of the importance of those effects. Most experimental work on animals and humans has concerned the cardiovascular effects of acutely administered alcohol, although the findings in such studies often cannot be applied directly to the relations of alcohol and chronic disorders. Yet much of the evidence from acute studies has implications for disease states. In addition, a number of epidemiologic studies have addressed chronic alcohol ingestion and cardiovascular effects.

Effects of Alcohol on Heart Rate, Blood Pressure, and Blood Vessel Tone

It has long been known that in healthy humans alcohol doses equivalent to two to five ordinary drinks (30–75 ml of alcohol) produce slightly increased heart rate, blood pressure (systolic more than diastolic), and cardiac output (Eliaser and Giansiracusa 1956; Grollman 1930; Juchems and Klobe 1969; Riff et al.

TABLE 1

Estimated Frequency by First-Listed Diagnosis of Hospital Discharges That Also Include an Alcohol-Related Diagnosis, Short-Stay Hospitals, 1975

First-Listed Discharge Diagnosis (ICDA Code)[1]	Number of First-Listed Discharge Diagnoses Accompanied by an Alcohol-Related Diagnosis[2]	Total Number of First-Listed Discharge	Percentage of All Discharges With Any Alcohol-Related Diagnosis[2]
ALCOHOLISM (303)[3]	423,910	423,910	—
CIRRHOSIS OF LIVER (571)[3]	106,010	106,010	—
ALCOHOLIC PSYCHOSIS (291)[3]	17,930	17,930	—
Neuroses (300)	26,340	421,220	6.3
Symptomatic heart disease (427)	14,350	499,880	2.9
Chronic ischemic heart disease (412)	14,250	1,193,330	1.2
Gastritis and duodenitis (535)	12,590	288,630	4.4
Diseases of pancreas (577)	12,380	92,510	13.4
Diabetes mellitus (250)	11,260	532,810	2.1
Other diseases of intestines and peritoneum (569)	10,570	183,370	5.8
Other diseases of liver (573)	9,390	41,720	22.5
Other diseases of respiratory system (519)	8,370	296,250	2.8
Pneumonia, unspecified (486)	6,440	299,970	2.1
Varicose veins of other sites (456)	5,660	21,210	26.7
Adverse effect of other and unspecified drugs (977)	5,550	87,550	6.3
Cholelithiasis (574)	5,390	467,790	1.2
Other and unspecified laceration of head (873)	5,200	99,560	5.6
Schizophrenia (295)	4,570	165,370	2.8
Injury, other and unspecified (996)	4,330	194,270	2.2
Personality disorders (301)	3,670	38,190	9.6
Other conditions (all other codes)	198,010	31,343,360	0.6
TOTAL	910,040	36,814,840	2.5

[1] Eight Revision International Classification of Diseases, Adapted 1965 (ICDA-8).
[2] The phrase 'alcohol-related diagnosis' is defined in this table as a diagnosis of any one of the following ICDA-8 codes: 291 or 303 or 571.
[3] The first three diagnoses (capitalized) are defined in this table as alcohol-related and therefore the value in the third column would be 100% by definition.

SOURCE: Malin et al. (in press).

1969). It is unclear how many of these changes are direct effects of alcohol on the circulatory system and how much they represent indirect nervous system regulation. However, in the case of severe intoxication the nervous system is believed to predominate in low blood pressure, slow heart rate, and, ultimately, death from cardiac standstill (Eliaser and Giansiracusa 1956). Some evidence has been presented that blood pressure elevations in persons who use large amounts of alcohol may be due primarily to alcohol withdrawal rather than to direct alcohol action (Wallace 1980).

Effects on Coronary Circulation

Studies of the effects of alcohol on the blood supply to the heart muscle (the coronary circulation) are inconsistent. Some of the experiments showing acute impairment of heart muscle contractile force in humans and dogs showed concomitant increase in coronary blood flow (Ganz 1963; Mendoza et al. 1971; Regan et al. 1969). Several other studies suggest that acute alcohol decreases coronary blood flow (Regan et al. 1966; Webb and Degerli 1965), although some studies suggest that it has no effect (Schmitthenner et al. 1958; Wendt et al.

1962). Electrocardiographic monitoring studies of humans with coronary disease who consumed alcohol suggested no benefit or possible worsening of impaired coronary blood flow during exercise (Orlando et al. 1976; Russek et al. 1950). However, it should be kept in mind that responses of normal coronary vessels to pharmacologic agents may differ from those of diseased vessels, which have limited capacity to dilate (Klatsky in press).

Effects on Heart Pumping Action

Many acute and chronic studies of both animals and humans indicate that alcohol at blood levels representing very mild to severe intoxication decreases the force of heart muscle pumping action (myocardial contractility) (Gimeno et al. 1962; Horwitz and Atkins 1974; Mendoza et al. 1971; Newman and Valicenti 1971; Regan et al. 1966; Spann et al. 1968; Webb and Degerli 1965; Webb et al. 1966). There is much evidence that humans with a long history of substantial alcohol intake and without clinical evidence of heart disease often have abnormally functioning heart muscles. This phenomenon, which many consider to represent preclinical heart muscle disease, has been demonstrated in several studies on humans and animals (Gould et al. 1969; Limas et al. 1974; Regan et al. 1969; Spodick et al. 1972; Wu et al. 1976). Men may be more susceptible than women to these effects (Wu et al. 1976).

Several biochemical effects of alcohol have been measured in heart muscle (Kikuchi and Kako 1970; Lochner et al. 1969; Regan et al. 1966, 1969; Rubin 1979). These biochemical effects could translate into a profound *acute* effect on both respiration and contractile action of heart muscle cells, with consequent impaired function. However, mechanisms relating *chronic* use of alcohol to heart muscle disease are still unknown.

Enlarged scarred hearts were described as early as 1861 among some chronic heavy users of alcohol (Friedreich 1861). In modern descriptions (Alexander 1966*a,b*; Burch et al. 1966; Schenk and Cohen 1970), the hearts show increased weight, dilatation of all chambers, scarring of heart muscle, and clots adhering to the inside linings of the chambers. Alcohol-induced abnormalities in heart muscle can also be detected by optical microscopy (Schenk and Cohen 1970) and electron microscopy (Alexander 1966*b*; Bulloch et al. 1972; Burch et al. 1966; Mitchell and Cohen 1970; Schenk and Cohen 1970). Histochemical studies show an increase in the accumulation of fat droplets and a decrease in the activity of enzymes of oxidative metabolism. None of the gross, optical microscopic, electron microscopic, or histochemical findings are specific enough to distinguish heart muscle diseases in users of large amounts of alcohol from cardiomyopathy in other persons. Electron microscopic studies have revealed similar heart muscle abnormalities in animals fed large quantities of alcohol (Burch et al. 1971; Regan et al. 1974; Segel et al. 1975). These experiments, in which the animals were supplied with all essential nutrients, imply that alcohol toxicity to the heart muscle is not related to associated nutritional deficiency.

Alcoholic Cardiomyopathy

So many investigators have seen an association between chronic substantial alcohol use and heart muscle failure that the evidence cannot be ignored. Longstanding use of substantial quantities of alcohol has been found in a large proportion of patients with unexplained heart disease, often in more than 50 percent (Alexander 1966*a*; Hamby 1970; Sanders 1963; Shugoll et al. 1972). These patients, a diverse group, have evidence of heart muscle disorder without evidence of a specific cause. This situation, which is generally called "cardiomyopathy" or "primary myocardial disease," comprises 2–3 percent of patients hospitalized for heart disease. The percentages found in autopsies are similar.

Alexander (1966*a*) reported that 80 percent of patients hospitalized at the Minneapolis Veterans Administration Hospital for cardiomyopathy were heavy drinkers, compared with 28 percent of patients with other diseases admitted to the same medical service. On the other hand, the proportion of alcohol users in some series of cardiomyopathy patients has been much lower; Goodwin (1972) stated that "alcohol is certainly not the cause of congestive cardiomyopathy in the majority of patients."

Other evidence consists of a few well-documented case reports. One well-nourished patient developed congestive heart failure in a 4-month period during which he ingested 12 to 16 ounces of scotch whisky daily; the abnormality subsided after he stopped drinking (Regan et al. 1966). Other such cases have been reported (Schwartz et al. 1975). An important study by Demakis et al. (1974) documented more frequent improvement of clinical abnormality in cardiomyopathy patients who abstained, compared with those who continued to drink.

Other circumstantial evidence is the observation of heart rhythm disturbances related to drinking. Brief drinking sprees in apparently healthy individuals can result in premature beats and paroxysmal atrial arrhythmias, especially atrial fibrillation (total loss of rhythmic beating in the heart's upper chambers). The phenomenon has been named "holiday heart syndrome" (Ettinger et al. 1976, 1978). More serious arrhythmias are believed to be related to acute alcohol use (Singer and Lundberg 1972). A recent case has been reported of an alcoholic patient in whom ventricular tachycardia (rapid beating) could be provoked only after alcohol ingestion (Greenspon et al. 1979). Among the earliest clinical features of alcoholic cardiomyopathy are nonspecific and often minor electrocardiographic (ECG) changes and rhythm disturbances (Bashour et al. 1975; Evans 1959; Pader 1973; Priest et al. 1966). The prevalence of such early nonspecific evidence of cardiac susceptibility to alcohol is not known. The likelihood of progression to chronic myocardial disease is also unknown and is presumed to be low, though these persons may represent a high-risk group (Klatsky in press).

The late clinical picture is a chronically weakened and dilated heart. Congestive heart failure, chronic rhythm disturbances, conduction abnormalities on the ECG, and high incidence of embolic complications (i.e., blood clots obstructing the circulation) are characteristic. Although the development is usually insidious, a number of patients seem to have an acute onset of severe heart failure and do not come to medical attention before the late stage has been reached. Even at this point some patients show partial regression, but many progress inexorably despite abstinence from alcohol and optimal medical therapy. Except for the relation to alcohol use, this clinical picture cannot be distinguished from chronic congestive cardiomyopathy of any cause (Klatsky 1980).

Abstinence produces a good recovery rate in early disease and can produce a marked degree of recovery even with advanced disease (Demakis et al. 1974; Reeves et al. 1978; Schwartz et al. 1975), although there is a high death rate from congestive heart failure, fatal arrhythmias, and embolism.

It has been estimated that 80 grams of ethanol a day (equivalent to six standard drinks) over a period of years is necessary to produce cardiomyopathy (Regan and Ettinger 1979). If this estimate is correct, it seems unlikely that drinkers without a drinking problem are at risk of permanent cardiac damage (Klatsky in press).

Alcohol and Hypertension

Strong epidemiologic evidence obtained from varied populations shows that regular use of large amounts of alcohol is associated with a substantially higher prevalence of hypertension (Beevers 1977; Clark et al. 1967; D'Alonzo and Pell 1968; Dyer et al. 1977; Kannell and Sorlie 1974; Mathews 1976; Myrhed 1974; Ramsay 1979).

The largest study (Klatsky et al. 1977, 1979*b*) used data gathered during checkup examinations given at the Kaiser-Permanente Health Care Program in Northern California. Persons were classified by questionnaire responses as nondrinkers or according to usual daily number of drinks. The data show a statistically strong association between blood pressure and known drinking habits of 83,947 men and women of three races.

Men of all three races who took two or fewer drinks daily had mean blood pressures similar to those of nondrinkers. Women of all three races who took two or fewer drinks daily had blood pressures slightly lower than nondrinkers. Men and women of all races who took three or more drinks daily had higher systolic and diastolic blood pressure than either nondrinkers or persons who took two or fewer drinks daily. This relationship proved to be independent of smoking, coffee use, salt use, blood group, educational attainment, and adiposity. The blood pressure-drinking relationship was progressive up to six or eight drinks a day in whites and Orientals, and up to three to five drinks a day in blacks. Drinking beyond those levels caused no further increase in blood pressure.

The difference in mean blood pressure in the Kaiser-Permanente study translated into 100 percent higher prevalence of hypertension (defined as blood pressure of 160/95 mm Hg or higher) in white men and women who took six or more drinks daily compared with nondrinkers or users of two or fewer drinks daily. Among black men and women, the prevalence of hypertension among users of three or more drinks daily was increased by about 50 percent. The doubled prevalence among the white heavier drinkers was quite similar to the findings in other studies (Conway 1968; Kannell and Sorlie 1974) in which the methods of classifying data allowed comparison.

Although the agreement among various studies establishes an association between alcohol use and blood pressure, the possibility still exists that the association, at least in part, could be influenced by such factors as (1) psychosocial stress as an underlying factor for both hypertension and use of large amounts of alcohol; (2) a common hereditary predilection for both alcohol use and hypertension; (3) other environmental factors such as dietary habits; or (4) alcohol withdrawal, which is associated with increased heart rate and blood pressure in some heavy drinkers (Wallace 1980).

A physiologic mechanism has not been established for the association between alcohol consumption and blood pressure elevations, though there has been some speculation that chronic corticosteroid excess (Rees et al. 1977; Smals and Kloppenborg 1977), or action through the renin-angiotensin hormone system (Linkola 1979) may be involved.

The possibility of true direct association between alcohol consumption and blood pressure is strong enough to lead some health practitioners to advise hypertensive patients who take three or more drinks a day (35 ml or more of absolute alcohol) to cut down (Klatsky in press).

Alcohol and Coronary Atherosclerosis

In the first half of this century there were a number of reports of an apparent inverse relation between chronic substantial alcohol use and atherosclerotic disease, including coronary disease. However, this was dismissed by some investigators (Parrish and Eberly 1961; Ruebner et al. 1961) as probably due to the tendency of alcoholics to die young, before they develop atherosclerosis. Some later reports (Chapman et al. 1974; Paul et al. 1963) also showed no association between alcohol use and coronary events.

There is little epidemiologic evidence to suggest that a relationship exists between alcohol and atherosclerosis in the aorta and peripheral vessels (Klatsky 1980; Klatsky et al. 1979*a*).

More recent studies have reported an inverse relationship (drinkers at less risk) between alcohol use and heart attacks (myocardial infarction) (Blackwelder et al. 1980; Friedman et al. 1974; Hennekens et al. 1978, 1979; Klatsky 1980; Klatsky et al. 1974, 1976; Kozarevic et al. 1980; Stason et al. 1976; U.S. National Heart Institute 1966; Yano et al. 1977). Although the relationship was not statistically significant and other risk factors were not controlled in some of the earlier studies, statistical significance, as well as control for smoking and other risk factors, has been achieved in several studies. In the Kaiser-Permanente studies (Friedman et al. 1974; Klatsky et al. 1974, 1976, 1979*b*), the largest difference in coronary risk was the difference between current nondrinkers (including past drinkers) and light to moderate drinkers (two or fewer drinks per day), but the inverse drinking-coronary relationship was slightly progressive up to six or more drinks daily. There was no significant relationship, positive or negative, between reported past heavy drinking and heart attack.

A recent study by the Kaiser-Permanente Program (Klatsky 1980; Klatsky et al. 1979*a*) showed a significantly lower hospitalization incidence for coronary disease among drinkers than among nondrinkers. These data were derived from followup of four matched groups of 2,105 persons each, including nondrinkers and users of two or fewer, three to five, and six or more drinks per day. Among these 8,060 persons there was again a slightly progressive inverse relationship between drinking up to six or more drinks per day and heart attack, but as in the earlier Kaiser-Permanente study, the largest difference in heart attack risk was between nondrinkers and those who had two or fewer drinks daily.

While most of the population studies suggest that drinkers suffer fewer major coronary events, studies of problem drinkers and alcoholics show the opposite. These include reports from studies of duPont employees (D'Alonzo and Pell 1968), the State of California Alcoholic Rehabilitation Program (California State Department of Public Health 1961), alcoholics in a rehabilitation program in Toronto (Schmidt and deLint 1972), Swedish Temperance Board registrants (Wilhelmsen et al. 1973), problem drinkers in the Chicago Peoples Gas Company in Chicago (Dyer et al. 1977), and heavy drinkers (five or more drinks a day) among Western Electric Company employees in Chicago (Dyer et al. 1977).

Caution in interpreting the reports on the presumably beneficial effects of moderate alcohol is clearly warranted. Based on present information, encouraging the use of alcohol to reduce the likelihood of occurrence or recurrence of heart disease must be questioned because it has been noted that any potential benefits to be derived appear to be outweighed by the attendant risks associated with increasing alcohol consumption (Blackwelder et al. 1980; Castelli et al. 1977; Knochel et al. 1975; Kozarevič et al. 1980). These risks include adverse effects on the cardiovascular system such as hypertension, stroke, and alcoholic cardiomyopathy, as well as other health and social hazards cited elsewhere in this report.

The High-Density Lipoprotein-Cholesterol Hypothesis

A plausible mechanism for a protective effect of small amounts of alcohol in coronary disease is based on the observation that alcohol raises high-density lipoprotein cholesterol (HDL-C) levels in blood (Bradley et al. 1978; Castelli et al. 1977; Danielsson et al. 1978; Garrison et al. 1978; Grande et al. 1960; Hartung et al. 1980; Hulley 1980; Hulley et al. 1977; Johansson and Laurell 1969; Johansson and Medhus 1974; Kuller 1980; Rhoads, Kagan, and Yano 1976; Wallerstedt et al. 1977). Other studies have shown that elevated HDL-C is inversely related to coronary atherosclerotic disease and may play a protective role by aiding in removal of cholesterol from the body by retarding the formation of atherosclerotic plaques (Castelli 1980; Goldbourt and Medalie 1977; Rhoads, Gulbrandsen, and Kagan 1976). The effect of alcohol in raising HDL levels is generally proportional to the amount regularly taken (Hulley 1980). Alcohol-induced HDL-C elevations decrease in days to weeks when drinking is stopped (Hulley 1980; Kuller 1980). There is evidence that the site of action of alcohol's influence on HDL is in the liver; in some very heavy drinkers with acute or severe liver disease the HDL levels may be very low, presumably as a consequence of hepatic injury, which limits the liver's capacity to synthesize or secrete lipids and lipoproteins (Kuller 1980; Sabesin in press).

Thus evidence exists that high HDL-C protects against the development of coronary heart disease, and that alcohol appears to elevate HDL-C when taken in quantities that do not damage the liver. It is tempting to speculate cause and effect from these data; that is, that alcohol use increases HDL-C, which in turn decreases coronary occlusion. However, while evidence that alcohol and HDL are linked is mounting, the hypothesis that this link means that alcohol protects against coronary disease is not yet firmly established.

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These possibly beneficial effects of moderate alcohol on HDL-C must be separated from the deleterious effects of excessive alcohol use on the liver and its secondary effects on lipoprotein metabolism (Baraona and Lieber 1979; Sabesin et al. 1979, 1980; Sabesin, Hawkins, Kuiken, and Ragland 1977; Seidel et al. 1972; Ragland, Bertram, and Sabesin 1978). Alcohol use leading to alcoholic hepatitis actually causes abnormal HDL metabolism and very low levels of HDL-C (Freeman et al. 1977; Ragland, Heppner, and Sabesin 1978; Sabesin, Hawkins, Kuiken, and Ragland 1977; Sabesin et al. 1979, 1980). With the development of alcohol cirrhosis, and eventually liver failure, persistent derangements in hepatic cholesterol and triglyceride synthesis and in plasma lipoprotein metabolism occur (Sabesin in press). Since HDL-C is decreased in alcoholic liver disease, it might seem contradictory that some individuals dying from alcoholism and alcoholic cirrhosis have less evidence of coronary heart disease and atherosIcerosis. The explanation may reside in the fact that the profound abnormalities in lipoprotein metabolism and the low HDL-C associated with alcoholic liver disease may occur for relatively brief periods in the life of an alcoholic, whereas sometimes it is decades before alcohol significantly damages the liver. Sabesin (in press) has suggested that during those decades alcohol may exert effects on hepatic and lipoprotein metabolism that lead to high HDL-C concentrations in blood and consequently afford some protection against coronary heart disease.

Alcohol and Other Cardiovascular Disease

A positive relation between drinking and stroke incidence has been reported (Blackwelder et al. 1980; Castelli 1980; Kagan 1980; Katsuki 1971; Klatsky 1980; Klatsky et al. 1979*a*). The relationship is stronger for hemorrhagic than for thrombotic stroke (Blackwelder et al. 1980; Klatsky et al. 1979*a*) and is felt to be not entirely explained by the association of both drinking and stroke with hypertension. A bleeding tendency due to alcohol has been implicated as a possible additional explanation (Kagan 1980).

An unusual form of angina pectoris, known as Prinzmetal variant angina, is widely believed to be related in some patients to reversible spasm of large coronary vessels (Rosenblatt and Selzer 1977). Although alcohol has been reported to be one of the pharmacologic agents that can induce the phenomenon (Fernandez et al. 1973), the association has not been widely observed. A number of cases of myocardial infarction have been reported among alcoholics with no evidence of atherosclerosis or thrombotic occlusion (Regan et al. 1975), and a mechanism of external constriction of coronary vessels by scarring due to alcoholic cardiomyopathy was postulated. Myocardial infarction without atherosclerosis is a poorly understood event that also occurs occasionally in nonalcoholics (Rosenblatt and Selzer 1977).

Substantial alcohol use has been reported to be associated with a higher incidence of venous conditions, such as phlebitis and varicose veins (Klatsky 1980).

Alcohol and the Endocrine System

The effects of alcohol on several endocrine systems were reviewed in the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978). Currently, much research interest is focused on the effects of alcohol on the metabolism of testosterone (male hormone), perhaps because the systems involved in the synthesis and degradation of that hormone are easier to work with.

Effects of Alcohol on Male Hormone Levels

Numerous studies have shown that acutely or chronically administered alcohol lowers serum testosterone levels in males of all species, including man (Badr and Bartke 1974; Baker et al. 1976; Cicero and Badger 1977; Cicero, Bell, and Badger 1980; Cicero, Bell, Meyer, and Badger 1980; Cicero, Bernstein, and Badger 1978; Cicero, Meyer, and Bell 1978; Distiller et al. 1976; Dotson et al. 1975; Farmer and Fabre 1975; Gordon and Southren 1977; Gordon et al. 1976, 1978; Lester and Van Thiel 1977; Marks and Wright 1977; Mendelson and Mello 1974; Mendelson, Ellingboe, Mello, and Kuehnle 1978; Mendelson, Mello, and Ellingboe 1978; Mendelson et al. 1977; Persky et al. 1977; Southren and Gordon 1970, 1976; Symons and Marks 1975;

Van Thiel and Lester 1976; Van Thiel et al. 1975; Wright et al. 1976; Ylikahri, Huttenen, Harkonen, and Adlercreutz 1974). Many male alcoholics manifest sexual impotence, loss of libido, and clinical symptoms of hypogonadism, including breast enlargement, loss of facial hair, and testicular atrophy as a result of diminished testosterone levels.

Research has continued in this area since the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978) and new findings are available. Before discussing these findings, however, it will be helpful to review general mechanisms in the hypothalamic-pituitary-gonadal axis, the part of the endocrine system involved in the production of testosterone.

The term *hypothalamic-pituitary-gonadal axis* describes a hierarchy of endocrine functions involved in the production of sex hormones in both males and females. The process begins in the brain structure called the hypothalamus, which secretes into the bloodstream a hormone called luteinizing hormone-releasing hormone (LH-RH). When LH-RH is taken up by the pituitary gland, located in the base of the brain, it stimulates the pituitary to secrete luteinizing hormone (LH) into the bloodstream. And when LH is taken up by the gonads, it stimulates the gonads to synthesize and secrete the sex hormones, which affect all parts of the body and are responsible for the secondary sex characteristics of males and females. In males, the principal sex hormone is testosterone; in females, it is estrogen.

Several mechanisms involving different levels of the hypothalamic-pituitary-gonadal axis or testosterone metabolism could account for the reduction of testosterone levels by alcohol (Cicero in press). As the following discussion shows, the reduction of testosterone levels caused by alcohol can be due to enhanced breakdown and reduced synthesis.

Enhanced Testosterone Breakdown

It is now well documented that testosterone clearance is enhanced in chronic alcoholic humans and animals (Bode et al. 1978; Distiller et al. 1976; Gordon and Southren 1977; Gordon et al. 1978; Lester and Van Thiel 1977; Rubin et al. 1976; Southren and Gordon 1970, 1976). The enhancement appears to be due primarily to the induction (increased synthesis) of liver enzymes called 5-alpha-reductases, which are responsible for the degradation of testosterone by converting it to dihydrotestosterone (Bode et al. 1978; Gordon et al. 1976; Rubin et al. 1976). New evidence also indicates that prolonged administration of alcohol in male animals and humans causes their estrogen levels to rise (Gordon, Southren, Vittek, and Lieber 1979; Gordon et al. 1975; Van Thiel et al. 1975) and that this increase correlates with an increase in the level of a liver enzyme called hepatic aromatase (Gordon, Southren, Vittek, and Lieber 1979), which is involved in the conversion of androgens to estrogens. Furthermore, it has been shown that there is an increased rate of conversion of testosterone and androstenedione to their respective estrogens in man (Baker et al. 1976; Gordon, Southren, and Lieber 1979; Gordon et al. 1975). It is probable that the signs of "feminization" in male chronic alcoholics are due to the simultaneous reduction in androgens and increase in estrogens (Cicero in press).

Reduced Testosterone Synthesis

Considerable evidence suggests that acute or chronic alcohol administration also depresses testosterone synthesis in the testes. In most studies involving acute alcohol administration, serum testosterone levels become depressed in 1–2 hours, reach maximum depression 3–5 hours after administration, and become normal or higher than normal 6–8 hours later when blood alcohol levels are very low (Badr et al. 1977; Cicero and Badger 1977; Cicero, Bell, and Badger 1980; Cicero, Bell, Meyer, and Badger 1980; Cicero, Bernstein, and Badger 1978; Cicero, Meyer, and Bell 1978; Mendelson et al. 1977; Rowe et al. 1974; Ylikahri, Huttunen, Harkonen, Seuderling, Onikki, Kardnen, and Adlercreutz 1974). The effect of acute alcohol has recently been found to be biphasic; that is, low doses increase testosterone levels and high doses depress them (Cicero, Bell, and Badger 1980; Cicero, Bernstein, and Badger 1978; Cicero, Meyer, and Bell 1978).

Most investigators have found that chronic alcohol administration has strong toxic effects on the testes (Baker et al. 1976; Distiller et al. 1976; Gordon, Southren, and Lieber 1979; Lester and Van Thiel 1977; Symons and Marks 1975; Van Thiel and Lester 1976; Wright et al. 1976). Serum testosterone levels are low in chronic alcoholics as well as in animals maintained on alcohol for long periods, and it appears that repeated and persistent alcohol use ultimately causes irreversible damage to the structural and biochemical architecture of the testes (Baker et al. 1976; Lester and Van Thiel 1977; Symons and Marks 1975; Van Thiel and Lester 1976; Van Thiel et al. 1975; Wright et al. 1976).

Evidence from several investigations indicates that reduced synthesis of testosterone in the testes is not due to a fall in LH levels. Decreases, increases, and no change in serum LH levels all have been observed after acute or chronic alcohol administration even when serum testosterone levels are markedly reduced (Baker et al. 1976; Gordon and Southren 1977; Gordon et al. 1976; Loosen and Prange 1977; Mendelson, Ellingboe, Mello, and Kuehnle 1978; Mendelson et al. 1977; Rowe et al. 1974; Simionescu et al. 1977; Toro et al. 1973; Van Thiel and Lester 1974, 1976, 1978; Van Thiel et al. 1974; Wright et al. 1975, 1976; Ylikahri et al. 1976, 1978).

Further evidence that impaired LH secretion is not responsible for decreased testosterone synthesis in rodents given alcohol includes the observation that a fall in LH does not precede a fall in testosterone, which would indicate a causal relationship, but instead parallels the fall in testosterone. This finding suggests that alcohol acts at both levels of the hypothalamic-pituitary-gonadal axis simultaneously (Cicero and Badger 1977; Cicero, Bell, and Badger 1980; Cicero, Bernstein, and Badger 1978; Cicero, Meyer, and Bell 1978).

Finally, several investigators have found that alcohol can still produce a precipitous fall in serum testosterone even when a fall in LH levels is prevented by administration of human chorionic gonadotropin, a hormone that promotes testosterone synthesis by raising LH levels (Cicero, Meyer, and Bell 1978; Ellingboe and Varanelli 1979; Gordon, Southren, Vittek, and Lieber 1979). Thus the evidence indicates that reduced testosterone synthesis is the result of direct toxic action on the testes. Several recent studies show that the toxic agent may be acetaldehyde, the metabolic product of ethanol, not ethanol itself (Cicero, Newman, and Meyer 1981; Cicero et al. 1979; Cobb et al. 1978; Ellingboe and Varanelli 1979; Gordon et al. 1980).

Alcohol and the Nervous System

Cognitive Dysfunction and Brain Damage

Prolonged, repetitive overindulgence in alcoholic beverages affects the brain. The evidence comes from a variety of sources. First, there is biomedical evidence of altered brain structures and functions from autopsies; pneumoencephalograms (brain X-rays); computer-assisted tomography scans (CT scans); cerebral blood flow measurements; electroencephalogram (EEG) measurements; measurements of event-related electrical potentials (brain reactivity); and biochemical, endocrinological, and psychopharmacological studies. Second, neuropsychological tests show the presence of cognitive and perceptual deficits in alcoholics that are similar to those in patients with brain damage unrelated to alcohol. Third, there are the well-described organic brain syndromes associated with alcoholism.

The brain syndromes are typically slow and insidious, with major subtypes of dementia (general loss of cognitive or mental abilities), specific loss of recent memory, and, to a lesser extent, loss of remote memory. It has been estimated that approximately 10 percent of alcoholics presenting for treatment may fall into a category called "chronic brain syndrome" (Parsons 1977), a condition usually considered irreversible. A large number of alcoholics fall into the intermediate stage of brain damage (Smith 1977) in which acute brain syndrome symptoms are absent and cognitive changes that may be present are not sufficient to diagnose chronic brain syndrome. The condition is considered reversible (Smith 1977), though there are questions as to whether recovery is complete. Alcoholics with intermediate-stage brain damage constitute the highest percentage of patients in alcohol treatment programs and are the primary concern of this report.

Altered Brain Structure and Function in Alcoholics

Atrophy (loss of brain cells) has been considered for many years to be one of the major consequences of alcoholism (Courville 1955; Parsons 1977; Ron 1977; Wilkinson and Carlen 1981). Parsons (1977) summarized the results of several pneumoencephalographic studies of alcoholics in the world literature and concluded that in any given sample of alcoholics the proportion of individuals with brain atrophy will range from 50 percent to 100 percent, depending on how selective an alcoholism treatment program is (the highest percentages are found in unselective alcoholism treatment programs).

More recently, computer-assisted tomography (CT) has become an exciting and new method for examining the structural integrity of the brain. Essentially, the technique consists of multiple X-ray exposures or scans of the brain from many different angles. The small differences in density of various structures are processed by a computer and cross-sectional images or "slices" are then displayed on a cathode-ray screen. These images may be photographed and judged clinically or measured quantitatively (Osborn 1979; Wedding and Gudeman 1980).

Several CT studies have reported signs of brain atrophy in alcoholics (Bergman et al. 1980*a,b*; Cala et al. 1978; Carlen and Wilkinson 1980; Epstein et al. 1977; Fox et al. 1976; Hill and Mikhael 1979; Hill et al. 1979; Lee et al. 1979; Ron et al. 1979). (See table 2.) The signs include enlargement of the brain ventricles (cavities in the brain tissue filled with cerebrospinal fluid) and widening of sulci (the valleys in the external convolutions of the brain cortex). Female alcoholics appear to have the same incidence of brain atrophy as males (Epstein et al. 1977), but the data are limited.

The effects of heavy social drinking are just beginning to be explored. A recent study (Bergman et al. 1980*a*) found that 18 excessive social drinkers from a random sample of 200 nonalcoholic patients had definite cortical sulcal widening (40 percent), widened third ventricles (36 percent), and elevated ventricle/brain ratios. The comparable values for the other nonalcoholics were 14 percent, 11 percent, and 10 percent.

Blood flow measurements, which indicate the degree of functional activity and level of metabolism in various parts of the brain (Lassen et al. 1978; Risberg 1980), have shown disturbed cerebral blood flow in alcoholics. Using this technique, Berglund and Ingvar (1976) found significantly reduced blood flow to the cortex in alcoholics for gray matter (brain cells) and white matter (brain nerves). The lower blood flow was linearly related to increasing age: the older the alcoholic, the lower the cerebral blood flow. Alcoholics over age 45 had a significantly greater reduction in blood flow to the lower frontal and anterior temporal areas than did younger alcoholics.

Another major line of research on brain functioning is the event-related potential (ERP). Records of electrophysiological activity of the brain (brain waves) are made during repetitions of certain stimuli, and the records are averaged by a computer to produce a typical stimulus-induced undulating response wave. The ERP is a remarkably sensitive measure of central nervous system disorders (Beck et al. 1975). Certain components of the wave are related to attentional and evaluative processes in normal individuals (Porjesz and Begleiter 1979).

Beck et al. (1979) compared the ERP responses of young normals, young alcoholics, and elderly normals to visual stimuli. The responses of young alcoholics and elderly normals were similar, supporting the notion of "premature aging" in alcoholics. Porjesz and Begleiter (1979) and Pfefferbaum et al. (1979) reported results distinguishing alcoholics from age-matched controls. Because the observed ERP responses are also abnormal in dementia, Pfefferbaum et al. (1979) concluded that they reflect mild dementia in alcoholics. This cognitive disturbance is found despite the fact that attentional and sensory filtering processes seem intact as judged from the lack of differences in early components of the wave. Porjesz and Begleiter (1979) reported that the visual ERPs in their alcoholics did not manifest the usual right hemisphere superiority seen in their controls and that the greatest differences in reduced amplitude in the alcoholics were found over the right frontal electrode placement.

TABLE 2
Summary of Abnormal Computerized Tomography (CT) Findings in Alcoholics and Controls[1]

Authors (Year) Country	Number (N) Alcoholics (Controls)	Mean Age Alcoholics	Percentage Males	Duration Alcoholic (Years)	Percentage Abnormal			
					Ventricles	Sulci	Cerebral[2]	Cerebellar
Fox, Ramsey, Huckman, and Proske (1976) United States	12 (60)	46.4	58	5.0+	75 (27)	17	–	–
Epstein, Pisani, and Fawcett (1977) United States	46	47.8	65	–	–	–	61.4	–
Cala, Jones, Mastaglia, and Wiley (1978) Australia	26	39.3	84	14.2	–	–	73.0	73
Hill, Reyes, Mikhael, and Ayre (1979) and Hill and Mikhael (1979) United States	15 (12)	34.0	100	14.3	7 (0)	0 (0)	–	–
Lee, Moller, Hardt, Haubeck, and Jensen (1979) Denmark	37	30.0	100	10.0	13	49	–	37
Ron, Acker, and Lishman (1979) England	100 (41)	43.5	100	17.3	71[4]	68(22)	–	–
Carlen and Wilkinson (1980) Canada	96 (146)	45.0	88	10.0+	60[4]	77[4]	–	–
Bergman, Borg, Hindmarsh, Idestrom, and Mutzell (1980*a*, *b*) Sweden	130 (195)	44.2	100	11.0+	36 (11)	62(16)	–	35 (5)
Bergman, Borg, Hindmarsh, Idestrom, and Mutzell (1980*a*) Sweden	18[3] (180)	–	100	–	36 (11)	40(14)	–	0 (5)

[1] Data in parentheses for controls; in almost all studies where controls are used they are equated in age with alcoholics.
[2]Cerebral refers to ventricular and/or sulci widening without reporting the incidence of the two separate components.
[3]Excessive social drinkers from normative study.
[4]Percentage of alcoholics 1 standard deviation greater than controls.

SOURCE: Parsons and Leber (in press).

Although the systematic study of alcoholics with the cerebral blood flow and ERP techniques is still in its infancy, the available studies clearly point to altered brain functioning in alcoholics who have been detoxified for several weeks and are past the withdrawal phase.

Behavioral Deficits—Cognitive Dysfunction

Parsons and Farr (1981) recently reviewed cross-national studies of intelligence and neuropsychological functioning in alcoholics. The review showed that alcoholics in treatment programs in different countries and throughout the United States typically range from average to slightly above average in both verbal and performance intelligence. However, performance on certain visual-spatial and perceptual-motor tests is significantly lower in alcoholics compared with controls. In neuropsychological studies with the Halstead-Reitan Battery there is consistent evidence for mild impairment of adaptive abilities. These tests have been shown to be quite sensitive to brain dysfunction and to aging. A general decrement in neuropsychological functioning in alcoholics is indicated on the new Luria Nebraska Neuropsychological Battery (Chmielewski and Golden 1980).

Males (Schau and O'Leary 1977) and females (Silberstein and Parsons 1980) manifest the same pattern of neuropsychological deficit, namely, relatively intact verbal functions and poorer perceptual-spatial, nonverbal abstracting, and problem-solving abilities. It is evident from these studies that intermediate-stage alcoholics who come into treatment programs (and do not have clinically diagnosable brain disorders) have a mild but significant neuropsychological impairment.

Neuropsychological Functioning in Social Drinkers

There seems to be some validity to the notion of a continuum of alcohol effects on cognitive functioning. The continuum ranges from no impairment in light social drinkers, occasional inefficiencies in moderate drinkers, mild deficits in heavy social drinkers, mild to moderate impairment in intermediate stage alcoholics, to the moderate/severe impairment in the dementias and the Wernicke-Korsakoff syndrome. The latter part of the continuum (from alcoholism to Korsakoff's syndrome) has been emphasized by Butters and his colleagues (Ryan et al. 1979) and is discussed in a later section of this report. It should be emphasized, however, that studies of social drinkers are just beginning to appear.

Parker and Noble (1977) gave alcohol usage questionnaires and a neuropsychological test battery to 102 men employed at a fairly high occupational level. Neither frequency of drinking nor lifetime consumption of alcohol predicted performance. However, it was found that larger average amounts of alcohol drunk on any one occasion were associated with poorer performance on neuropsychological tests. In another study, Parker et al. (1980) administered the Shipley-Hartford test to 45 male university students between 21 and 30 years of age who were to be paid for participation in a subsequent acute alcohol experiment. These students reported an average of approximately four standard drinks two times a week. The findings replicated those of the previous study.

In a subsequent article, Parker and Noble (1980) found that the inverse correlation between amount of alcohol drunk per occasion and performance was significantly higher in social drinkers above age 45 than in social drinkers below that age. Thus age and the amount of alcohol drunk interact; the older the social drinker and the more alcohol consumed per occasion, the poorer the performance.

The effects of social drinking history in female alcoholics were examined by Jones and Jones (1980). Moderate social drinkers had significantly poorer memory scores than light social drinkers. The effects of a single acute dose of alcohol were greater in the moderate social drinkers than in the light social drinkers. Again the quantity of alcohol consumed and the age of a social drinker were important factors.

In the study by Bergman et al. (1980*a*), the 18 excessive social drinkers who had significantly more abnormal CT measures are probably closer in drinking behavior to alcoholics than are the social drinkers of previous studies. The 18 had significantly lower scores on several neuropsychological tests. Likewise, the "heavy drinkers" reported by Cala et al. (1978) scored significantly lower on a variety of cognitive function tests. The same pattern was found in diagnosed alcoholics.

Reversibility of Brain Damage and Cognitive Dysfunction in Alcoholics

Clinicians and scientists have generally thought that brain damage from chronic alcohol abuse is irreversible and that improvements in the behavior of abstinent alcoholics were due to undamaged brain structures taking on the functions of damaged structures. Recent evidence has caused these beliefs to be reexamined.

The evidence comes from CT scanning of the brains of chronic alcoholics. The first report came from researchers at the Addiction Research Foundation in Toronto. A decrease in cerebral atrophy was found in four of eight alcoholics scanned after 2 weeks of abstinence and again 1 year later (Carlen et al. 1978). Subsequent scans on 15 additional abstinent patients or patients who had significantly reduced their drinking (Carlen and Wilkinson 1980) showed decreases in average ventricular and sulcal width, but the decrease was not statistically significant. Older patients tended to show less improvement on the second scan. Similar findings were reported by Ron et al. (1979).

In all of these studies, improvement was reported on psychological tests of at least some patients, but it is not clear whether they were the same patients whose CT scans showed improvement. Only Carlen et al. (1978) reported the number of patients (four out of eight) who showed improvement on both measures. The relationship between CT measures and psychometric tests should be examined in future research. More consistent results should appear as CT methodology is improved and its use is standardized.

Seven of nine reports (78 percent) that have appeared since 1976 reported significant improvement of at least some cognitive abilities in alcoholics during the first month of abstinence (Ayers et al. 1978; Cermak and Ryback 1976; Goldman and Rosenbaum 1976; Goldman et al. 1978; Kish et al. 1980; McLaughlin et al. 1979; Sharp et al. 1977). On the other hand, Page and Schaub (1977) and Eckardt et al. (1979) did not demonstrate widespread improvement in cognitive performance.

The studies indicate that different abilities recover at different rates. Verbal abilities appear to recover faster than nonverbal abilities. As indicated in the studies by Goldman (in press) and his associates, verbal deficits are limited primarily to new vocabulary building and seem to disappear after about 2 or 3 weeks of abstinence. Similar improvement is seen in pure sensory and motor capacities. More complex abilities such as short-term memory and visual-spatial learning show somewhat less improvement within a month. Even more complex nonverbal abstracting ability and perceptual-motor abilities remain impaired, especially in some patients. Older patients with a longer period of alcohol abuse show the least improvement.

Six studies examined various aspects of cognitive reversibility over periods of 1–6 months (Carlen and Wilkinson 1980; Guthrie and Elliot 1980; Jenkins and Parsons 1980; Kish et al. 1980; Leber et al. 1981; Page and Schaub 1977). Four of the six studies (67 percent) yielded evidence of significant improvement. The data suggest that the abilities most impaired at the end of 1 month, i.e., nonverbal abstracting ability and perceptual-motor abilities, recover to a limited extent after 3 to 6 months. In the two studies that included a control group, the data suggest that for some areas the alcoholics remained impaired relative to the controls.

Six studies examined reversibility over periods of 1 year or longer (Berglund et al. 1977; Fabian et al. 1980; Grant et al. 1979; Hill et al. 1979; Long and McLachlan 1974; O'Leary et al. 1977; Schau et al. 1980). Again, 67 percent of the studies indicate improvement, especially in abstracting and visual-perceptual motor abilities.

In view of these findings, it appears that a wide range of cognitive abilities of alcoholics are at least partly reversible, but it is possible that the deficits that remain a year or longer are permanent (Parsons and Leber in press).

The questions surrounding reversibility of brain and cognitive dysfunction in alcoholics are critically important for understanding the effects of the disorder, and its treatment and outcome. The present evidence for reversibility is encouraging but not clearly established (Parsons and Leber in press).

The Wernicke-Korsakoff Syndrome

The Wernicke-Korsakoff syndrome represents an extreme on the continuum of cognitive impairment resulting from alcohol-induced brain damage. The major symptoms of the Wernicke stage include a global confusional state; ophthalmoplegia; nystagmus; ataxia; and pain, loss of sensation, and weakness of the legs and arms (Victor et al. 1971). The patient is disoriented as to time and place, unable to recognize familiar people, apathetic, inattentive, and unable to maintain a coherent conversation. If not treated with large doses of thiamine (vitamin B), a patient with a Wernicke encephalopathy is in danger of fatal midbrain hemorrhages. After 2 or 3 weeks of thiamine treatment, the ophthalmic problems, ataxia, and confusional state disappear or improve greatly. The remaining clinical symptoms are those of the chronic Korsakoff stage of the syndrome. It is important to note that very few Wernicke patients whose etiology involves alcohol abuse show a complete recovery to their premorbid cognitive state.

The neurotoxic effects of alcohol that can result from years of heavy consumption have been implicated in alcoholic Korsakoff patients. The most striking and persistent features of these patients are severe amnesia, confabulation, and remarkable personality alterations. The Korsakoff patient's memory disorder involves both anterograde (difficulty in learning new information) and retrograde (difficulty in recalling public and personal events from the recent past) amnesias.

The effects of anterograde amnesia are especially striking. Learning the name of the physician, nurse, hospital, or even the location of one's bed may require weeks or months of constant repetition and rehearsal. The patient cannot remember events that occurred minutes before. Three common words read to the patient cannot be recalled 10 seconds later (Cermak and Butters 1973; Butters and Cermak 1976).

In a seeming attempt to cope with these memory gaps, the patient confabulates, i.e., recites imaginary experiences. Regardless of premorbid personality characteristics, the Korsakoff patient is passive, indifferent, and lacking in affect and initiative. Given this combination of cognitive and personality symptoms, it is not surprising that almost all Korsakoff patients must be institutionalized for the remainder of their lives.

Since the publication of Talland's (1965) monograph, the vast majority of neuropsychological studies concerned with alcoholic Korsakoff's syndrome have centered on the processes underlying the profound inability to learn new information (Butters and Cermak 1975, 1976, 1980; Cermak and Butters 1973). Three hypotheses have been advanced: (1) *the proactive interference hypothesis*—patients are unable to acquire new information because of interference from previously learned materials; (2) *the limited encoding hypothesis*—patients fail to encode, at the time of storage, all the attributes of a stimulus; (3) *the limited contextual encoding hypothesis*—patients may be able to encode the physical or semantic attributes of a stimulus but fail to note the temporal and spatial contexts in which the stimulus was encountered, so that they may later recognize the stimulus as familiar but cannot recall where or when they experienced it. Complete and valid theories must await more thorough empirical knowledge of the Korsakoff patients' performance on various cognitive tasks (Butters in press).

Neuropathology of the Wernicke-Korsakoff Syndrome

There have been several recent reviews of the neuropathology of the Wernicke-Korsakoff syndrome (Brierly 1977; Mair et al. 1979; Victor et al. 1971). Brierly (1977) noted that most of the literature supports the conclusion that the neurological symptoms of Wernicke's encephalopathy are related to lesions of the brain stem and cerebellum, while the amnesic symptoms of the chronic Korsakoff state involve damage to several thalamic and hypothalamic structures surrounding the third ventricle of the brain. The dorsomedial nucleus of the thalamus and the mammillary bodies of the hypothalamus are the specific structures most often associated with the alcoholic Korsakoff patient's amnesia.

Despite the evidence that Wernicke-Korsakoff's syndrome is related to specific subcortical lesions, the etiology of this brain damage remains obscure. Victor, Adams, and their colleagues (Brierly 1977; Dreyfus 1974; Victor et al. 1971) have gathered considerable data that point to thiamine deficiency as the primary factor in this disease. Since chronic alcoholics often fail to eat nutritionally balanced diets, malnutrition and avitaminosis are common among them.

Although most textbooks of neurology accept avitaminosis as the primary cause of the Wernicke-Korsakoff disorder, there are now impressive data that prolonged alcohol consumption, unaccompanied by malnutrition, results in permanent learning deficits and significant brain pathology (Freund 1970; Freund and Walker 1971; Riley and Walker 1978; Walker and Freund 1971; Walker and Hunter 1978). This evidence that alcohol may have a direct toxic effect on the brain has led to controversial suggestions that the etiology of the Wernicke-Korsakoff syndrome be reevaluated. The major controversy concerning etiology focuses on the amnesic symptoms and the Korsakoff stage of the syndrome. Amnesic symptoms do not disappear with the administration of thiamine, and as Freund (1973) noted, there is virtually no documented evidence of a *permanent* memory disorder in patients with thiamine deficiencies unaccompanied by alcohol abuse. It is possible then that the amnesic syndrome in the Korsakoff stage may result from an interaction of thiamine deficiency and the direct neurotoxic effects of alcohol (Butters in press).

Alcohol and Cancer

Epidemiological and clinical observations in the past century have shown that alcohol consumption is involved in the etiology of cancer. Although the mechanism of cancer causation is unknown, heavy alcohol consumption has been related to an increased risk of cancer at various sites in the human body, particularly malignancies involving the mouth, pharynx, larynx, and esophagus.

Results of the Third National Cancer Survey of 7,518 cancer cases (Williams and Horn 1977) revealed a significant positive association between alcohol intake and cancers of the oral cavity and larynx and less striking positive associations between alcohol and cancers of the esophagus, stomach, colon, liver, breast, thyroid gland, and malignant melanoma. The relative odds were usually higher in females, who also differed from males by a positive association between alcohol and rectal cancer. Upper digestive tract cancers were found to occur with greater frequency in men, blacks, lower socioeconomic groups, and with increasing urbanization and increasing age (35–70 years).

Mouth, Tongue, Pharynx, and Larynx

Alcohol and tobacco appear to act synergistically in the pathogenesis of cancer of the upper digestive tract. In a classic retrospective study of 543 men and 116 women with oral cavity cancers, Wynder et al. (1957) reported that consumption of alcohol, especially whisky, was an important factor and that smoking also played a role. More recently, Wynder and Stellman (1977) reported results of a study of 3,716 patients with cancer. Investigating the possible cocarcinogenic effect of tobacco and alcohol usage, they reported a dose-response relationship for liquor at constant tobacco usage in both men and women, indicating that the risk for each type of cancer increased with the quantity of alcohol consumed. An increase in risk with alcohol consumption was not observed among nonsmokers.

However, alcohol and tobacco are not the only factors involved in cancers of the upper respiratory and digestive tracts. In women, Plummer-Vinson's disease (a syndrome of difficult swallowing, tongue inflammation, and a type of anemia) was found to be a precursor of cancer. Wynder (1978) suggested that the major effect of alcohol in the pathogenesis of mouth and larynx cancers seems to be associated with nutritional deficiencies. This assumption is supported by the fact that Plummer-Vinson's disease, a condition associated with longstanding iron deficiency, increases these cancers even in the absence of smoking and drinking.

Esophagus

The incidence of esophageal cancer varies enormously in different parts of the world. The incidence is moderate in most Western countries, with a remarkable exception in Brittany and Normandy in Western France. A recent retrospective study reported by Tuyns et al. (1979) found a linear relationship between the logarithm of risk of esophageal cancer and daily alcohol consumption, and an additional risk related to apple brandy and cider. This study also reported that the combination of alcohol consumption and smoking increased the risk in a multiplicative manner.

The suggestion of a relationship between specific beverage type and esophageal cancer was also made by MacPhail et al. (1979) between consumption of a traditionally brewed South African beer high in iron content and esophageal cancer.

Chilvers et al. (1979) assessed age-specific death rates in England and Wales for 1911–75 and suggested that exposure to alcohol during certain periods of life may be critical in the development of esophageal cancer.

Liver

The possible association between liver cancer and alcohol consumption is related to cirrhosis, because the cancer very often is accompanied and preceded by cirrhosis or hepatitis and infection (Anthony 1979; Bassendine et al. 1979; Lapis and Johannessen 1979; Lehmann and Wegener 1979; Omata et al. 1979). Although primary liver cancer is rare in North America and Europe, it is one of the most frequent forms of cancer in Asia, Africa, and Latin America.

The mechanisms by which alcohol increases the risk of primary liver cancer are probably different from the direct action suspected in cancer of the upper respiratory and digestive tracts. In the liver, alcohol seems to act similarly to other liver-damaging agents. Alcoholic liver injury has a deleterious effect on liver cell organelles (Lieber 1980). Schottenfeld (1979) suggested that the impairment of mitochondrial function and ultrastructural damage may be analogous to the biochemical lesion within the epithelial cells of the upper digestive tract. High alcohol consumption, particularly in association with liver disease and malnutrition, also has been shown to be immunosuppressive (Schottenfeld 1979).

Pancreas

Alcohol consumption has been reported to increase the risk of pancreatic cancer in some studies (Burch and Ansari 1968), but not in others (Monson and Lyon 1975). Recent opinion is that alcohol is not a significant etiological agent in the development of pancreatic cancer, although tobacco and alcohol may act as cocarcinogens in a small percentage of patients (Cubilla and Fitzgerald 1979).

Large-Bowel Cancer

Epidemiological studies on the association between alcohol consumption and colon and rectal cancer have yielded a strong correlation between beer consumption and colorectal cancer, particularly rectal cancer (Correa and Haenszel 1978; Enstrom 1977). Results from the Third National Cancer Survey (Williams and Horn 1977) showed a positive association between alcohol use and rectal cancer for women only. However, leads derived from observation of population aggregates have not been confirmed by cohort studies such as that of 14,313 Danish male brewery workers (Jensen 1979) in which no increased risk of colorectal cancers was found.

Cancer in Alcoholic Patients

Alcoholic patients with cancer have poorer chances of survival and greater chances of developing another primary tumor than do other patients with the same cancer. A recent report by Schottenfeld (1979) of a study of 9,415 patients with cancer of the upper digestive system, larynx, and lung corroborates this finding. The investigators found that the risk of developing a second cancer, especially of the upper digestive tract or larynx, was enhanced significantly by the patient's heavy exposure to tobacco and alcohol before the first cancer appeared.

Mortality data from a recent study of samples of 100 male and 100 female alcoholic patients in Sweden indicated a significantly higher than expected mortality (4 times) due to cancer in the men, but not in the women (Dahlgren and Myrhed 1977). Thorarinsson (1979) reported a 1.5 times greater mortality due to cancer among alcoholic men than expected but did not include women.

Risks Associated with Alcohol and Other Constituents in Alcoholic Beverages

The carcinogenic property of an alcoholic beverage may reside in other constituents or cogeners of the beverage, not in the ethanol molecule itself. Tuyns (1978) suggested that ethanol may enhance the action of carcinogenic substances such as polycyclic hydrocarbons, nitrosamines, and fusel oil, which may be found in some foods and beverages. Recently, n-nitrosodimethylamine (NDMA), a suspected carcinogen, has been detected in some brands of scotch, whisky, and beer (Broad 1979).

The Teratogenic Effects of Alcohol

A common pattern of birth defects and mental retardation among some children of alcoholic women has raised serious concern among scientists and health authorities in recent years and has prompted intensive research into the relationship between such defects and the consumption of alcoholic beverages by pregnant women. The evidence confirms an association between maternal drinking during pregnancy and an increased risk of poor pregnancy outcome. Scientists are now searching for the mechanisms responsible for prenatal damage.

In 1968, French investigators (Lemoine et al. 1968) reported morphologic, psychomotor, and mental abnormalities in 25 of 54 children of alcoholic mothers. In 1973, Jones and Smith independently discovered similar malformations which they labeled *fetal alcohol syndrome* (FAS). Subsequently, many corroborating case reports have appeared in the literature (Clarren and Smith 1978; Streissguth, Landesman-Dwyer, Martin, and Smith 1980).

The principal features of FAS have been grouped into four categories (Clarren and Smith 1978).

1. *Central Nervous System (CNS).* The most common CNS dysfunction (seen in more than 80 percent of the patients) was mental retardation. Other characteristics were poor motor coordination, hypotonia (reduced muscle tone), irritability in infancy, tremulousness, and hyperactivity in childhood.

2. *Growth Deficiency.* Prenatal and postnatal reduction in body length, weight, and head circumference below the third percentile occurred in more than 80 percent of the cases.

3. *Characteristic Cluster of Facial Abnormalities.* Most frequent and characteristic are short palpebral fissures, a short upturned nose with a hypoplastic philtrum (underdevelopment of the ridge between the base of the nose and the upper lip), a sunken nasal bridge, epicanthal folds (folds on the inner aspect of the eyelids), a thin upper lip, hypoplastic maxilla (underdevelopment of the midface), and growth retardation of the jaw. These facial anomalies are individually subtle, but when many are jointly present, they characterize a face which is sufficiently distinctive to be recognized as FAS by trained dysmorphologists.

4. *Other Major and Minor Malformations.* Among the FAS patient population there is an increase in malformations of various organ systems including cardiac, urogenital, and skeletal. For example, septal defects and heart murmurs, aberrant palmar creases, limited joint movements, and renal anomalies have been reported.

Children of alcoholic women who do not manifest all the signs of FAS may show a few of the features. For example, offspring of alcoholic women may be at risk for lowered birth weight (Little et al. 1980; Olegard et al. 1979; Russell 1977; Sokol et al. 1980), lowered intelligence (Jones et al. 1974; Streissguth et al. 1979), learning defects (Shaywitz et al. 1978), cardiac defects (Dupois et al. 1978; Loser and Majewski 1977), and cerebral palsy (Olegard et al. 1979). Increased stillbirths and infant deaths were noted as early as 1899 by Sullivan. Even among women not considered alcoholics or alcohol abusers, those who drink relatively greater amounts of alcohol (by self-report) are at higher risk for pregnancy complications and suboptimal development among their children, as discussed below.

Human Studies

Although several hundred cases of FAS have been reported (Altman 1976; Clarren and Smith 1978; Dehaene et al. 1977; Majewski et al. 1976; Palmer et al. 1974), the syndrome has not been recorded to date in the children of nonalcoholic women. Since the diagnosis of maternal alcoholism is a consistently noted characteristic accompanying FAS, alcohol is considered the likely teratogenic or embryotoxic agent for these patients. However, alcoholics are more likely to be smokers, use caffeine and other drugs, exhibit malnutrition, and lead a life style distinct from the nonalcoholic population. While each of these factors could affect pregnancy outcomes, none of these alone has produced the set of malformations associated with FAS. To date, epidemiological studies and animal experimentation have implicated alcohol as the probable agent.

Epidemiological data also point to an alcohol-related increased incidence of congenital birth defects, birth anomalies, and altered development. In a medical record prospective cohort study conducted at a Cleveland medical center, Sokol et al. (1980) analyzed 12,127 consecutive pregnancies over a 52-month period. Within this sample, 204 women (1.7 percent) were clinically diagnosed as alcoholic in the antepartum period. These alcoholic women did not differ from the remainder of the sample in racial distribution or parental education. For the alcoholics, a statistically significant increased risk was associated with alcohol consumption, but not with smoking, for a number of items including history of habitual spontaneous abortion, history of low birth weight infant (below the 3rd percentile), need of antepartum nondelivery hospital admission, premature separation of the placenta, uterine tetany, heavy meconium, precipitous delivery, neonatal Apgar score below 7, neonatal infections, and abnormalities of the oral cavity and genitourinary systems. A sufficient number of alcoholics who were not cigarette users was present to permit an analysis of age-weight outcomes independently for alcohol and for cigarettes. Of the nonalcoholic nonsmokers, 3.2 percent delivered small-for-gestation-age (SGA) infants, compared with 5.8 percent of the nonalcoholic smokers (relative risk 1.8), 7.8 percent of the alcoholic nonsmokers (relative risk 2.4), and 12.4 percent of the alcoholic smokers (relative risk 3.9). Five infants, all from the alcoholic group, were diagnosed by the neonatologist as having FAS. Since this study had not been originally designed to investigate alcohol use during pregnancy, the actual number of identified alcoholics is probably markedly underestimated at 1.7 percent.

Another study was conducted at Boston City Hospital with 633 pregnant women (Ouellette et al. 1977). Of these, 9 percent were classified as heavy drinkers, defined as averaging more than 1.5 ounces of absolute alcohol per day, with five or more drinks on at least one occasion per month. Women who drank less than once a month were labeled as abstinent or rare drinkers (52 percent), and those women meeting neither rare nor heavy criteria were grouped into the moderate drinking category (39 percent).

After delivery, a physician administered a detailed pediatric, neurological, and developmental examination without prior knowledge of any history to 322 of the infants. Infants were classified as abnormal if they displayed congenital anomalies, growth abnormalities, or abnormalities on the neurological examination. Twice as many infants born to the heavy drinking women were found to be abnormal as compared with either moderate drinking or rare drinking/abstinent women (71 percent vs. 35 percent); the finding of 35 percent abnormalities in the control group implies that the population served by Boston City Hospital is generally at high risk. Additional comparisons between infants of heavy drinkers and those of the other groups revealed statistically significant differences in jitteriness (29 percent vs. 10 percent), smallness-for-gestation-age (SGA) (27 percent vs. 8 percent), birth length, birth weight, smaller head circumferences, microcephaly below 3rd percentile (12 percent vs. 0.4 percent), congenital anomalies (32 percent vs. 9 to 14 percent), major anomalies (12 percent vs. 3 percent), and multiple congenital anomalies (20 percent vs. 3 to 5 percent). Analysis of several other variables which may have affected outcome revealed inadequate diet in both the heavy drinkers and the control groups; also fewer significant statistical relationships were observed when considering smoking rather than alcohol consumption.

The possibility that moderate and social drinking have adverse effects on fetal outcome has also been explored. A prospective study of 1,529 pregnancies at the University of Washington was initiated to address this issue. In one analysis of a subsample of this population (Hanson et al. 1978), the children of women who consumed 1 or more ounces of absolute alcohol per day just prior to or during pregnancy, or who experienced one or more episodes of heavy drinking in this period, were compared with children of light drinking and abstaining mothers with regard to growth and morphogenesis. The pediatrician evaluated infants by a standard examination without knowledge of maternal history. Particular attention was paid to: (1) gestation size, (2) head circumference, (3) small palpebral fissures, and (4) combinations of specific dysmorphic features, such as broad low nasal bridge and long philtrum. Of 163 infants examined, 11 infants with clinical features of abnormal growth and morphogenesis were found, 9 from the index group and only 2 from the controls. Two of the 9 in the index group were diagnosed as FAS; however, their mothers were alcoholics. Partial presentation of the syndrome occurred in a statistically significant manner, more frequently in the index cases than in the control group (7 vs. 2). In 6 of the 7 index cases, alcohol intake, by self-report, was above 1 ounce but below 2 ounces of absolute alcohol a day.

Behavioral and neurological effects were assessed in additional analyses of subsamples from the Washington study. In one analysis, 417 neonates were examined on the Brazelton Behavioral Scale (Streissguth et al. 1977) and statistically significant effects of alcohol, distinct from smoking, caffeine, and other factors, were found on scores related to poor habituation, muscle tone, and decreased activity. Systematic naturalistic observations in another analysis (Landesman-Dwyer et al. 1978) revealed a number of neonatal behavioral patterns associated with increasing maternal alcohol consumption, after controlling for effects due to other maternal and infant factors. These infant behaviors, atypical for healthy term babies, included: (1) increase in time spent with open eyes, (2) increase in body tremors, (3) increase in head-to-left preference, (4) decrease in the proportion of time spent in high levels of body activity, and (5) large increase in hand-to-face (self-stimulatory) activity. Maternal drinking also may negatively affect newborns' ability to suck (Martin et al. 1979) and to learn an operant task (Martin et al. 1977). Medical records of 1,439 infants showed that increasing alcohol use was associated with lower Apgar scores, fetal heart rate abnormalities, and breathing difficulties (Streissguth et al. 1978). Recently, followup data show that at 8 months of age offspring of moderate drinkers had small, but statistically significant, lags in their developmental progress (Streissguth et al. 1980). Another followup study found that maternal drinking was related to altered attention span and fidgetiness among 4-year-olds (Landesman-Dwyer et al. 1980).

Decreased birth weight has been used frequently as an index for increased neonatal risk (U.S. Department of Health, Education, and Welfare 1979). In a prospective study of 263 members of a health maintenance organization (Little 1977), a statistically significant decrease in infant birth weight of 91 grams was obtained for women who reported averaging 1 ounce of absolute alcohol per day for the pre-pregnancy period. The same amount ingested in late pregnancy was associated with a decrease in infant birth weight of 160 grams. These women had been carefully matched to controls for the contribution of smoking. In addition to smoking, the associations were independent of such variables as maternal age, height, parity, gestation age, and sex of the child. Kaminski et al. (1978), among many others, have also reported a small but statistically significant decrease in birth weight, independent of smoking, for women who drank more than 1.5 ounces of absolute alcohol a day during pregnancy.

Recently, two studies (Harlap and Shiono 1980; Kline et al. 1980) have reported that spontaneous abortion is positively associated with alcohol consumption. In one study (Kline et al. 1980), an association was evident when 1 ounce of absolute alcohol was consumed twice a week. The other study (Harlap and Shiono 1980) reported a statistically significant increased risk for second trimester spontaneous abortion at the level of one to two drinks (0.5 to 1 ounce of absolute alcohol) a day. Both studies controlled for likely confounding variables including smoking.

Animal Models

Animal models are used to determine alcohol's potential teratogenesis and the mechanisms that may produce any observed adverse effects. Animal models are also used to assess the effects of potential confounding variables such as nicotine, caffeine, and malnutrition. However, this strategy introduces a new complication since the physiologic and metabolic alterations produced by alcohol may be different from species to species, and from humans. Thus the examination of many species is necessary for greatest validity.

The most appropriate animal studies, to date, have controlled for potentially confounding factors by: (1) avoiding alcohol administration via a route that may cause direct placental or fetal injury, (2) nutritional control (termed pair-fed control) in which the nonalcohol-treated control animals do not receive a more nutritious diet than animals consuming alcohol, and (3) monitoring of blood alcohol levels. This latter factor is required to ascertain that the blood alcohol levels are elevated to an extent comparable to human situations.

Chernoff (1977) and Randall and coworkers (Randall and Taylor 1979; Randall et al. 1977) employed vitamin-fortified liquid diets containing alcohol and pair-fed controls and observed dose-related effects of alcohol on prenatal mortality and frequency of malformations in mice. Many of the defects observed were similar to those reported in FAS patients, i.e., cardiac anomalies, hydronephrosis, limb defects, and microphthalmia. Similar findings have been reported in beagles (Ellis and Pick 1980); the alcohol-treated dogs actually had a higher total caloric intake than the controls.

Rodents ingesting alcohol, even with an all-liquid diet, decrease total food intake. Thus, in the pair-fed design, controls are restricted to the same extent. The importance of animal studies to date is that with nutrition-matched controls, significantly elevated teratogenesis is found in alcohol-fed animals.

Some recent studies (Badr and Badr 1975; Klassen and Persand 1976; Rockwood et al. in press) have indicated that attention must be given to paternal as well as maternal ethanol effects. Ethanol consumption in male rats prior to mating was found to be associated with multiple fetal deaths and significant reduction in total litter weight and birth weights of offspring of female mates not exposed to ethanol.

Incidence

Incidence data have been obtained for certain regions of Europe. In Göteborg, Sweden (Olegard et al. 1979), an incidence of 1/600 births for definite FAS with an equal number of probable FAS cases has been reported for the 7,600 births in that city over a recent 17-month period. A similar incidence was reported for Roubaix in the north of France based upon 6,927 total births in 1975 and 1976 (Dehaene et al. 1977). FAS data are not currently found in the large national data bases in the United States. However, it has been reported in the literature, based upon clinical experience at certain American health centers, that FAS is one of the leading causes of birth defects frequently associated with mental retardation (Clarren and Smith 1978; Smith et al. 1976). The two most common birth defects associated with a significant incidence of mental impairment, Down's syndrome and spina bifida, have been reported to occur in the United States at 1/1,332 and 1/2,012 respectively (U.S. Center for Disease Control 1978). Given the reported high incidence of FAS of 1/600 in two European studies (Dehaene et al. 1977; Olegard et al. 1979), it is important to obtain accurate epidemiological estimates of incidence in the United States.

It is clear that alcohol use is associated with a wider spectrum of congenital anomalies and growth abnormalities than just the FAS. The increased occurrence of such abnormalities is discussed in an earlier section. Data from the Cleveland (Sokol et al. 1980) and Boston (Ouellette et al. 1977) studies indicated that heavy alcohol use substantially increased the risk for an adverse fetal outcome even when other potentially contributory variables were considered. Furthermore, a decrease in birth weight appears to be associated with more moderate alcohol ingestion (Little 1977).

Mechanisms

The actual mechanisms underlying the adverse effect of alcohol consumption on fetal and neonatal growth and development are unknown. It is plausible that the direct action of alcohol on the developing embryo may exert a toxic or teratogenic effect (Brown et al. 1979). Acetaldehyde, a metabolic product of alcohol, is another possible agent. Alcohol abuse is also associated with a number of nutrient deficiencies, including the vitamins thiamine, folate, and pyridoxine and minerals such as zinc. In turn, deficiencies of such agents during even brief periods of pregnancy have been reported to be associated with teratogenesis (Hurley 1979). It is conceivable, therefore, that the embryotoxic and teratogenic effects from alcohol abuse in pregnancy may arise as a consequence of nutritional deficiencies.

Alcohol consumption during pregnancy has been considered as the likely antecedent of alcohol-related fetal anomalies. However, other mechanisms for teratogenic actions are plausible as well. Alcohol abuse prior to pregnancy may result in physiologic damage to reproductive organs, or in other metabolic or physiologic dysfunctions, which can persist beyond the alcohol abusing period (Scheiner et al. 1979). Hence, a fetus might conceivably be adversely affected even if the mother terminated abusive drinking before pregnancy. Moreover, damage by alcohol to gametes in the female or in the male are possibilities for genetic, as distinct from teratogenic, injury (Badr and Badr 1975; Klassen and Persaud 1976).

Support for the hypothesis that heavy alcohol consumption during the actual pregnancy period contributes substantially to the risk of adverse neonatal outcome is provided by the Boston City Hospital study (Ouellette et al. 1977) as well as a study in Sweden (Olegard et al. 1979) and others (Landesman-Dwyer in press).

Studies using low doses of alcohol may provide some indication of the mechanism(s) involved. Maternal ingestion of small amounts of alcohol has been shown to affect fetal physiologic functioning in studies of fetal breathing movements. Consumption of one standard drink (0.5 ounce of absolute

ethanol) significantly suppressed fetal breathing movements in two independent studies (Fox et al. 1978; Lewis and Boylan 1979), indicating an acute alcohol effect at this dosage on the fetal central nervous system. The long-term consequences of this effect are not known.

Alcohol consumption during lactation and the consequent effects on nursing infants is also an area of concern. Heavy alcohol consumption is known to decrease milk ejection (Cobo and Quintero 1969). This factor, coupled with the impaired sucking ability noted in some offspring of heavy alcohol consumers (Clarren and Smith 1978) would be expected to contribute to nutritional deprivation in the infant. Alcohol also readily enters the breast milk (Binkiewicz et al. 1978) thereby providing alcohol to the nursing infant. Alcohol derived by this mechanism has been attributed as the cause of a pseudo-Cushing's syndrome in infants (Binkiewicz et al. 1978).

Conclusions

It is recognized that there are some limitations in the human studies undertaken to date. The characteristics of the populations vary from study to study, as do the techniques for obtaining mothers' reports of alcohol use and for collecting the outcome variables. Although some studies failed to provide appropriate statistical or actual controls, overall the consistency of the findings is impressive. None of the human studies were designed to separate out direct effects of alcohol on the fetus from indirect effects mediated by altered maternal physiology or genetics.

However, the extensive number of case reports on FAS and the studies of alcohol use during pregnancy, both in humans (Dehaene et al. 1977; Olegard et al. 1979; Ouellette et al. 1977; Sokol et al. 1980) and in animals (Chernoff 1977; Randall and Taylor 1979; Randall et al. 1977), has led investigators to the reasonable assertion that maternal alcohol use is a risk factor for fetal outcome. Whether the types of defects produced are sufficiently characteristic to be differentially labeled FAS has been questioned by some (Mendelson 1978), but regardless of whether a label is applied or not, it appears that maternal alcohol abuse is related to adverse effects on fetal growth and development.

Many important questions remain to be answered: (1) What are the dose-response relationships for fetal alcohol syndrome and other adverse outcomes associated with maternal alcohol consumption? (2) What are the degrees of interindividual variability with respect to dose-response relationships? (3) What are the vulnerable periods for susceptibility to alcohol-associated birth defects and anomalies? (4) What are the effects of different patterns of consumption (e.g., binge drinking)? (5) What biological characteristics of mothers and fathers contribute to an increased risk of FAS or other alcohol-related damage in children?

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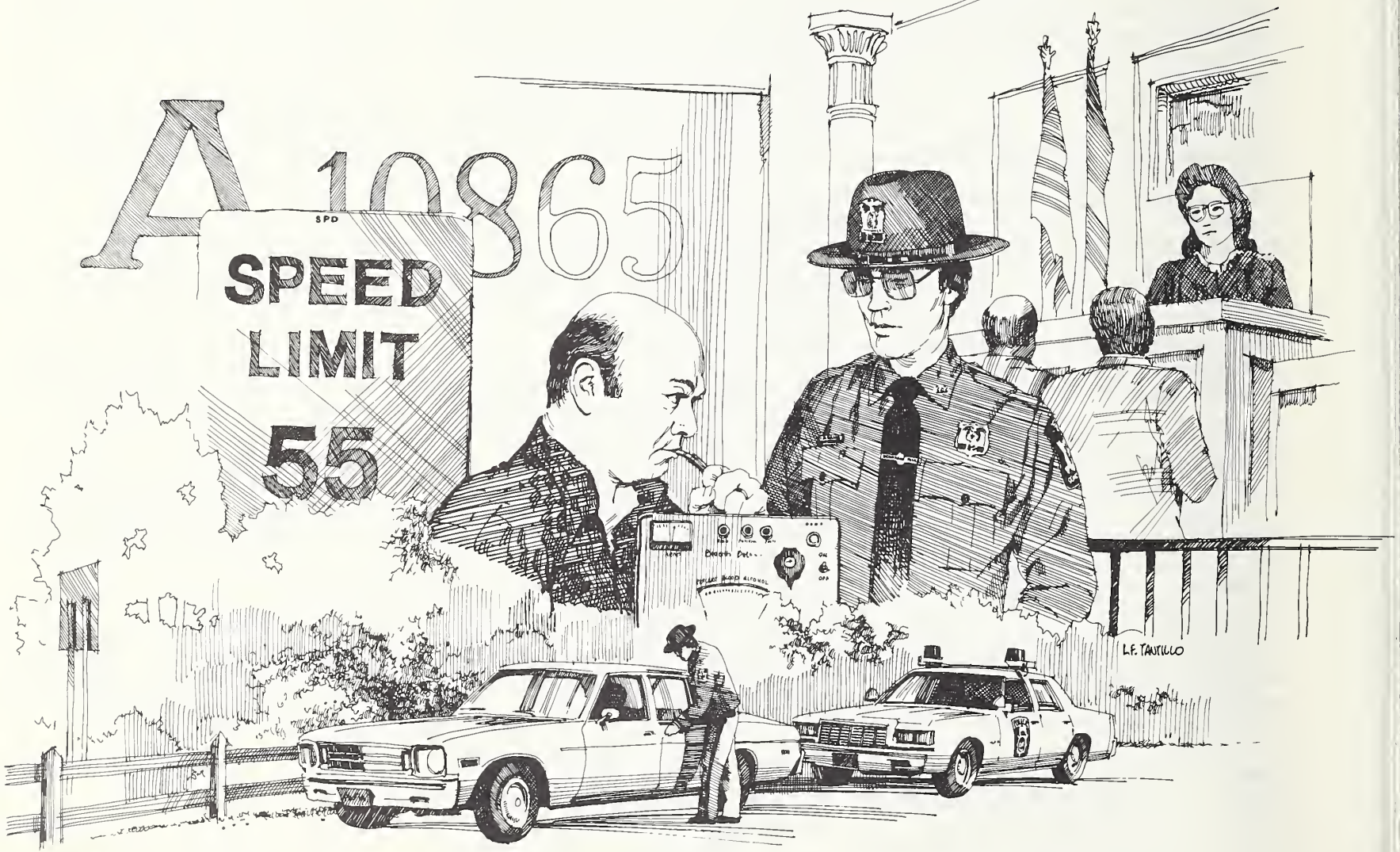
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4. Social Implications of Alcohol Abuse



Charge: driving while intoxicated, speeding, fail

Alcoholism and alcohol abuse have far-reaching effects for American society as a whole. Alcoholism affects not only the alcoholic but also the alcoholic's family, friends, and coworkers. This chapter examines the social implications of alcoholism and alcohol abuse: highway injuries and fatalities, crime, suicide, accidents, and economic costs. Social and other factors for the elderly, youth, women, and ethnic populations are also considered.

Casualties

Accidents

In the United States, traffic accidents are the major cause of violent death and a significant factor in serious injury. In 1977 an estimated 49,500 men, women, and children died in motor vehicle crashes; almost 2 million were injured. More than 16 million crashes involved property damage. Between 35 and 64 percent of the drivers in fatal accidents and between 6 and 25 percent of the drivers in nonfatal accidents had been drinking prior to the accident (Roizen in press). Motor vehicle crashes caused by alcohol abuse cost American society $5.14 billion a year (Berry et al. 1977).

Traffic accident studies consistently show that the relative probability of crash involvement increases as blood alcohol content (BAC) increases. At a BAC above .10, the relative probability has been found to be several times that for zero BAC. This increased risk holds firm for all categories—rural and urban crashes, fatal and personal injury crashes, single- and multiple-vehicle crashes, and for drivers responsible for these crashes. In general, the alcohol-related risk at a higher BAC is substantially greater for serious accidents—those involving injury or death—than for all accidents taken together. Research has also indicated that at higher BAC levels the relative probability of causing a crash is significantly greater than that of being involved in a crash. Studies made by Cameron (1977) and Hurst (1973) demonstrate that the relative risk of being responsible for a crash at a BAC of .10 varies from just under 3 times as great to almost 15 times as great as the relative risk at zero BAC. In contrast, "the relative risk of being involved in an accident but not judged responsible for the crash is only about 1.6 to 1.7 times as great at all positive levels of blood alcohol as at zero blood alcohol" (Cameron 1977; Hurst 1973).

Studies show that male drivers with raised BAC levels, under the age of 24 and over the age of 65, are at a greater risk of being involved in an alcohol-related accident than men between 25 and 64 years of age. As may be expected, as the BAC increases, the probability for accidents is increased for both very young and very old drivers (Zylman 1972).

Although a lack of uniform accident reporting systems precludes accurate estimates of alcohol's involvement in motorcycle accidents, there are indications that the range of alcohol involvement in fatal motorcycle accidents is between 40 and 50 percent, and in nonfatal accidents, 3 to 6 percent. Evidence also indicates that single-vehicle motorcycle accidents and fatalities show a higher rate of alcohol involvement (Quane 1978).

Statistics demonstrate that alcohol is related to traffic crashes; however, questions remain about the nature and strength of this relationship. Studies on this topic differ regarding the proportions of crashes that involve problem drinkers (Bacon 1968; Fine and Scoles 1974; Selzer and Vinokur 1975). A 1976 Boston University study provides data indicating that problem drinkers contribute significantly to highway accidents. This study compared the probability of crash involvement for problem drinkers with that of a controlled group of drinkers matched on demographic variables. Problem drinkers comprise 48 percent of the drivers responsible for their own fatal injury, 41 percent of the drivers who survived but were responsible for another fatality, and 31 percent of the drivers who fatally injured a pedestrian (Boston University School of Law 1976).

The importance of the automobile for youth, coupled with the role of alcohol, has produced increasing numbers of alcohol-related traffic crashes among young drivers. For example, in 1978, drivers under 20 years old were involved in 11,500 crashes with at least one fatality. Most of the youth and alcohol research has been conducted since the *1968 Alcohol and Highway Safety Report* from the U.S. Secretary of Transportation to the U.S. Congress (Boyd 1968). This research has consistently shown that between 45 percent and 60 percent of all fatal crashes with a young driver are alcohol related. The probability of alcohol involvement increases with the severity of the crash, and for all traffic crashes, young drivers are considerably more likely to have been drinking than older drivers (Douglass in press). No other cause of mortality approaches traffic accidents among youth in terms of numbers, and no other cause of death is as predictably associated with traffic accidents as is alcohol (Comptroller General of the United States 1979).

Alcohol, traffic crashes, and other related offenses are an area of concern regarding special population groups other than youth. For example, driving while intoxicated (DWI) convictions among Native Americans in Los Angeles County were reported to be seven times greater than the proportion of Indian drivers (Pollack 1969), while among Hispanic Americans, studies reveal higher arrest rates for DWI than for the general population (Engmann 1976; Hall et al. 1977; Haugen 1975; Kern County Department of Mental Health Services 1975; Los Angeles Police Department 1975; Welfare Planning Council 1970). Accidents while driving under the influence of alcohol were also reported to be higher than average for Hispanic Americans (Hyman 1968; Hyman et al. 1972). Among Asian Americans, who historically have had significantly low rates of alcoholism, along with minimal records of arrest, it has been observed that alcohol-related violations, including "driving under the influence," provide the highest arrest category (Kitano in press).

Apart from automobiles, most accidents occur in the home or in public places, with falls being the most prevalent form of accident. Alcohol is a factor in a substantial number of these incidents (Roizen in press).

In a study of high school students (Suchman 1970), it was found that 36 percent of regular drinkers had had two or more accidental injuries in the previous year that were serious enough to interfere with daily activities. Eight percent of nondrinkers had such accidents.

Occupational accidents affect a significant portion of the working population. Alcohol inhibits coordination and judgment, lengthens reaction time, and decreases motor performance and sensory skill in simulated industrial work. Wolkenberg's experiments on the effect of alcohol intoxication on normal persons demonstrated changes in performance up to 18 hours after the ingestion of alcohol (Wolkenberg et al. 1975). In a study of railroad workers (Mannello and Seaman 1979), it was estimated that 30,000 workers drank on duty on an estimated 90,000 occasions during one year.

With the exception of motor vehicle accidents, falls account for more accidental deaths than any other cause. Falls account for over 60 percent of injuries. A 1978 study (Haberman and Baden) found that almost 50 percent of those dying from falls had been drinking. Other studies have shown that alcoholics are at greater risk for falls and resulting death than the general population.

Another area in which alcohol appears to be involved is fires and burns. Studies in this area need more stringent controls; however, in one study conducted by Halpen et al. (1975), in which fire deaths were compared with other deaths, it was found that 52 percent of adult fire deaths involved alcohol (Roizen in press). Alcoholics appear to be particularly vulnerable to fire, with one study observing that they were 10 times as likely to die in a fire as members of a standard comparison population (Schmidt and deLint 1972). Since alcohol lowers oxidation in the cells, an increased risk is present in the probability of being overcome by smoke inhalation. Alcohol is involved in nearly three times as many deaths from cigarette-caused fires as in deaths in fires resulting from other causes.

Other accidents in which alcohol is reported to play a significant contributory role are drownings. Haberman and Baden (1978) found that 68 percent of drowning victims had been drinking, while Hudson (1976) found that 50 percent of them had been drinking. Alcohol is consumed frequently and in quantity during recreational activities such as boating and swimming. In recreational contexts, higher consumption may lead to poor judgment, faulty coordination, and lack of attention. Swimmers may take more risks, and the "warming" effect of alcohol may encourage people to stay in cold water too long. Alcohol also can depress the swallowing and breathing reflexes, often turning a normal situation into a tragedy. Other studies on the role of alcohol in drowning note that alcohol is associated with an increase in bravado and a decrease in the ability to cope (British Medical Journal 1979).

Crime

Different aspects of alcohol consumption including blood alcohol concentration, drunkenness, and alcoholism have been associated with criminal events (Aarens et al. 1977). Alcohol use and its subsequent acute and chronic effects have been related to formation of criminal intent, aggravation of the criminal event through excess violence, and influencing the outcome of a completed crime.

A number of hypotheses have been advanced to explain the role of alcohol in criminal and victim behavior. In terms of aggression and the propensity of individuals to commit crimes when they become overly aggressive, alcohol has been portrayed as a disinhibitor whose physiological effects influence the mechanism which controls behavior. However, proponents of the disinhibition theory have been criticized for lack of evidence (Pernanen 1976). A relationship between emotional state and aggressive behavior is also problematic in a causal sense, since a clear relation between stressful states and aggressive behavior has not been established. Other researchers have noted that alcohol consumption can intensify certain states, and if anger is increased, it may enhance the likelihood of aggression and violence (Aarens et al. 1977). Another model posits a direct link between physiological changes and behavior, claiming the existence of certain "chemical codes for behavior" or "triggers for aggression" (Mark and Ervin 1970).

The dyscontrol syndrome, characterized by a seizure-like reaction to alcohol called "pathological intoxication," is a recent explanation of the drinking and violent behavior relationship. Brain damage or abnormality is suggested as the basis of the syndrome (Mark and Ervin 1970). A synergistic action between alcohol and other drugs, resulting in increased violent behavior, is another possible explanation for alcohol's involvement with crime (Tinklenberg 1973).

Event-based control studies of criminal behavior have not been made, but general observations indicate that alcohol is reportedly present in a large proportion of criminal events. There has been little analysis of the relationship between drinking problems and criminal behavior after drinking, but the studies that have been made show that problem drinkers are more likely than other offenders to have been drinking at the time of the crime (California Department of Public Health 1960; Mayfield 1972). Moreover, alcoholics and problem drinkers observed in treatment samples have criminal records far greater than those expected

in the general population. It is not clear, however, whether drinking alcohol leads to criminal behavior or whether involvement in criminal behavior leads to drinking (Goodwin et al. 1971; Roizen and Schneberk 1977).

Suicide

In terms of committing suicide, alcoholics are at particularly high risk. Although the level of risk has been found to vary, at least one study reported it to be 30 times greater than the risk of suicide in the general population (Medhus 1975).

Studies have shown that a significant number of alcoholics who committed suicide had experienced the loss of a close interpersonal relationship within 6 weeks or less of their death. In addition, the suicides studied tended to suffer from a long list of difficulties ranging from health to legal to financial problems. The distribution of these events, as with the loss of a close interpersonal relationship, were skewed significantly toward the final weeks of the subject's life. It is suggested that interpersonal loss may be a predictor of suicide among alcoholics (Murphy et al. 1979). A possible connection between suicide and alcohol's mood-changing properties has been made. Studies show that between 15 and 64 percent of suicide attempters and up to 80 percent of suicides had been drinking at the time of the event. For those with histories of problem drinking, these proportions are most variable and range from 1 to 33 percent for attempters and 2 to 48 percent for suicides.

Research also shows that alcoholics who committed suicide had a history of more suicide attempts than nonalcoholics, and alcoholic suicide attempters more closely resemble actual suicides than do nonalcoholic attempters. These findings suggest that alcoholics who attempt suicide form a significant part of the population that eventually succeeds in committing suicide. The association between the use of alcohol in combination with other drugs is probably responsible for some proportion of accidental deaths as well as suicides.

Women have a higher rate of attempted suicide than men while men have a higher rate of completed suicide than women (Gibbs et al. 1966). Among alcoholic women the number of suicide attempts clearly exceeds that for the female population as a whole (Curlee 1970; Rathod and Thomson 1971; Rimmer et al. 1971), while recent data indicate that the rate of completed suicides among female alcoholics is 23 times the population rate (Adelstein 1977). These findings suggest that the number of completed suicides among female alcoholics is significantly higher than for women in the general population.

The Elderly

Another subgroup of the American population that is affected by alcohol abuse is the elderly. Many older problem drinkers are overlooked or ignored because their behavior is not socially disruptive. For the older person, the definition of problem drinking seems pragmatic: problems with a spouse, adult children, or other people in the social sphere; health; accidents; arrests; and so on (Gomberg in press). An exact estimate of how many adults over the age of 60 suffer from alcoholism or problem drinking is not known. Gomberg (in press) argues that the number is substantial.

Many older persons are reactive problem drinkers; that is, they had no problems with alcohol before the age of 60, but reacted to the stresses, losses, and negative aspects of aging with depression and problem drinking. Epidemiological data support the notion that recently retired, recently widowed men over 65 are a subgroup of older persons at particularly high risk (Gomberg in press).

Older problem drinkers report more binge drinking; problems with spouse and relatives; problems with friends and neighbors; financial problems related to drinking; problems with the police in accidents; and slightly more health problems than do middle-aged alcoholic men. Middle-aged alcoholics report more symptomatic behavior and psychological dependence on alcohol; more belligerence associated with drinking; and more alcohol-related job problems. This suggests that while employee assistance programs may reach the alcoholic under the age of 60, programs for those over 60 should involve the spouse, relatives, neighbors, and friends.

Native Americans

Estimates of drinking problems among Indians are derived from statistics concerning trouble with the law, disruption of family life, high suicide rates, high cirrhosis rates, and drug and alcohol abuse among Indian youth. In fact, 5 of the 10 major causes of death among Indian people are directly related to alcohol abuse: accidents, cirrhosis of the liver, alcoholism, suicide, and homicide (Andre 1979).

Weibel (in press) noted that Native Americans show a large number of arrests related to excessive drinking. In 1960, 76 percent of all Indian arrests in the Nation were alcohol related (Stewart 1964), while Los Angeles Police Department data indicated that, of all adult Indian arrests made between 1952 and 1967, 89.9 percent were for intoxication (Bramstedt 1973). FBI crime statistics showed arrest rates for urban Indians to be over 40 times greater than for the Nation as a whole (38,461 vs. 936 per 100,000) (Stewart 1964).

Alcohol abuse is seen as a major problem by Native Americans themselves (Weibel in press). The stereotype concerning the American Indian and the Indian's abuse of alcohol is that to drink is to be Indian and to be Indian is to drink.

The prevalence of drinking among the Native Americans affords numerous opportunities for both direct and indirect social reinforcement. The example portrayed to Indian youth is that drinking is socially acceptable and condoned. This reinforces drinking practices among Indian youth. Various studies show that by age 13 Indian youth are drinking frequently (Cokerham 1975; Colegrove and Associates 1977).

As reported by the U.S. Center for Studies of Crime and Delinquency (1974), "The suicide rate among American Indians is twice that of the general population in the United States. About 75 to 80 percent of all suicides among Indians are alcohol-related."

In one study of suicides in a large traditional Indian pueblo population in the Southwest, it was observed that between January 1971 and August 1974, a total of 83 attempts and 9 suicides were recorded. A history of excessive drinking was associated with 72 percent of the 92 suicide occurrences (attempts and suicides). Seventy-eight percent of the suicides and 83 percent of the suicide attempters had been drinking within 12 hours of the occurrence. These rates are significantly higher than estimates for the non-Indian population (Andre and Ghachu 1975).

Treatment for American Indians has recently begun to take into account Indian customs and culture. The most promising methods appear to include Indians in planning, implementing, and organizing their own programs on a community basis (Baker 1973; Dudney 1973; Moore 1973; Neely 1975; Novak 1972).

Native Alaskans

A wide variety of factors affect the drinking practices of Native Alaskans, including climate, daylight hours, the forceful introduction of modern technology (post-World War II), and the dramatic urbanization, with new leisure time, that replaced a subsistence way of life (Knisley 1972; Lewis in press).

The five major ethnic groups indigenous to Alaska (Northern Eskimos, Southern Eskimos, Athabascan Indians, Southeastern Indians, and Aleuts) can be characterized as having extended family ties, a general permissiveness toward children, a determination to retain the essence of cultural identity and values, and a sense of affinity to their natural environment. The subsistence way of life, however, is no longer supported by the natural environment, team efforts are no longer necessary to succeed, overt social and civil controls are either illegal or impractical, and youth and young adults are contemptuous of civil/religious roles (Knisley 1972). Kraus (1977) noted that for "many Native Alaskans, and especially the young, the breakdown of the organized, consistent and traditional relationships due to the pressures from outside, has resulted in a reduced ability to find and hold a position of psychological integrity and centrality. Loneliness, anxiety, frustration, continuing stress, and at times, despair characterize the lives of many Native Alaskans today."

Alcoholism and alcohol abuse appear to be major problems in Native Alaskan communities. According to one study, Alaskan Natives (who comprise only 17 percent of the State population) account for these statewide statistics: 60 percent of the deaths due to alcoholism (over five times the non-Native rate); 67 percent of all client admissions to State-funded alcoholism programs; 25 percent of the deaths due to cirrhosis of the liver; 43 percent of all suicides; 38 percent of all homicides; 42 percent of all homicide arrests; 44 percent of all aggravated assault arrests; and 31 percent of arrests for forcible rape (Mala 1979). Additional research concerning the prevalence, problems, and treatment needs of Native Alaskans is required.

Hispanic Americans

The Hispanic population[1] of the United States comprises a number of subgroups that differ widely in national origin and culture. This heterogeneity makes across-the-board findings for Hispanics difficult since research tends to focus on only a few groups as opposed to the entire Hispanic population. Nevertheless, studies indicate that the extent of problem drinking among the Spanish-speaking tends to be greater than among the general population, a finding supported by high alcohol-associated arrest and mortality data (Alcocer in press).

[1] The term *Hispanic American* is used here to designate those persons living in the United States who share a Hispanic cultural background. The term includes persons referred to in the literature as Chicanos, Cubanos, Puerto Ricans, Latinos, Hispanos, Latin Americans, Spanish Americans, Spanish surname, Mexican Americans, etc.

In his review of the literature, Alcocer (in press) cites several studies indicating that death rates from cirrhosis of the liver among Hispanic Americans are higher than for the general population. Moustafa and Weiss (1968) found this to be true among Mexican Americans in San Antonio, Texas; Aviles-Roig (1973) found similar results among Puerto Ricans; and Edmandson (1975) demonstrated this result in his studies of autopsies performed at the University of Southern California-Los Angeles County Medical Center. Edmandson's results were particularly interesting. For 1970, he found that among Mexican American men cirrhosis of the liver accounted for 52 percent of all deaths, compared with 24 percent for Anglo men, 23 percent for Anglo women, 22 percent for black men, 21 percent for black women, and 20 percent for Mexican American women. Similarly, Engmann (1976) found high death rates from cirrhosis of the liver among Hispanic American men in statewide health reports for California.

Studies have reported higher arrest rates for public drunkenness and for drunk driving among Hispanic Americans than for the general population (Engmann 1976; Hall et al. 1977; Haugen 1975; Kern County Department of Mental Health Services 1975; Los Angeles Police Department 1975; Welfare Planning Council 1970). The same types of arrests were also higher than average for Hispanic American youth (Elias 1973). However, Morales (1972) expressed the view that high arrest rates in Hispanic American neighborhoods are a product of overpolicing. If this allegation is true, then the arrest rates for public drunkenness and drunk driving must be reevaluated.

Accidents while driving under the influence of alcohol were also reported to be higher than average for Hispanic Americans (Hyman 1968; Hyman et al. 1972). Kaye (1977) found that alcohol was a common denominator in traffic fatalities in Puerto Rico. The author reported that one-half of the adult population drives after drinking, reflecting a general lack of concern about traffic safety.

Alcohol use and abuse among Hispanic American youth have also been studied. The results are interesting because of the contrasts they demonstrate (Alcocer in press). For example, self-reported statistics showed that a sample of Hispanic American youth had a lower percentage of drinkers and a higher percentage of abstainers than a sample of Anglo youth (Sanchez-Dirks 1978).

Among college students, Levy (1973) found that white students had higher rates of alcohol use than blacks, Orientals, or Hispanic Americans. Robles et al. (1979) found that Puerto Rican adolescents had lower overall alcohol consumption rates than American adolescents. Guinn and Hurley (1976) found that their predominantly Hispanic American sample of secondary school students reported using alcohol as often as the predominantly white student group (i.e., 64 percent). These findings pose an interesting research question. Why do Hispanic American youth, particularly males, change from being nonusers and nonabusers of alcohol into adults with higher rates of alcohol use and abuse than their Anglo counterparts (Alcocer in press)?

Problem drinking may be caused in part by the stress of acculturation—difficulty in learning English, lack of success in finding employment and housing, and prejudice and discrimination. In his study of Hispanic Americans in California, Alcocer (1977) found high rates of poverty. Alcohol-related problems were also found to be high in these areas. Picard-Ami (1973), Sanchez (1974), and Cassillas (1975) cited socioeconomic status as a cause of high alcohol use and abuse. However, Guinn (1978), in his study of Mexican American youth in the Lower Rio Grande Valley region of Texas, found no evidence of a clear-cut relationship between socioeconomic level and alcohol use among Hispanic American youth.

Minority group status was indicated as a cause of high incidence of alcohol use and abuse (de Rios and Feldman 1975; Dobkin-de Rios 1979). Certainly, discrimination, prejudice, and low social status (all of which are associated with minority group status) are experienced by many Hispanic Americans in the United States (Alcocer in press).

Traditional prevention and treatment programs have been subject to criticism in regard to the Spanish-speaking for their failure to take into account language and cultural differences. Effective programs require bilingual staff and use of family, religious, and community support systems.

Black Americans

Data on alcohol use among black Americans are scarce. Since the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978), few new findings have been reported (King in press). Research studies have not dealt with the issue of black alcoholism in a significant manner. Is it more accepted in the black community (Harper 1976)? Is it largely a cultural disorder (Cotton 1979)? These and other questions require careful empirical study.

Reliable data, however, have been reported for biomedical consequences. For blacks, alcoholism appears to increase the risks of cancer (Keller 1978; Tuyns 1978), obstructive pulmonary disease and severe malnutrition (Moore et al. 1977), intestinal disaccharidase activities (Perlow et al. 1977),

hypertension (Klatsky et al. 1977), and birth defects (Russel 1977; Wood 1977), and to contribute to increasingly high cirrhosis rates—from 5.8 per 100,000 in 1940 to 20.4 per 100,000 in 1974 (King in press). An additional cause for concern is that blacks suffer from a significantly higher rate of hypertension than other groups. This already high rate can be further complicated by drinking.

According to King (in press), the problem of alcoholism has not yet been recognized and accepted in the black community so as to allow for community-defined standards, folkways, and mores on the subject of drinking. Studies are needed in all areas of alcohol abuse among black Americans—psychological, cultural, biological, and socioeconomic (King in press).

Asian Americans

Asian Americans remain one of the less visible populations in the United States, a fact influenced by several factors: their comparatively small numbers (although this is changing due to increased immigration), their geographic distribution (a heavy concentration in Hawaii and on the West Coast, especially in California), their housing patterns (segregated), and their lifestyle, which historically involves keeping a low profile (Kitano in press).

As a result, much of what is known about Asian Americans borders on the stereotypical, especially regarding alcohol use and abuse. In general, it is assumed that Asian Americans represent a nondrinking population; that they have cultural taboos against drinking, reinforced by allergic and toxic reactions to alcohol; that when they do drink, resulting problem behavior is minimal; and that their use of alcohol treatment facilities is low.

Asian Americans, like Hispanic Americans, comprise a number of diverse groups, making generalizations difficult. In general, Asians have had a traditionally low incidence of alcohol abuse. With the increased immigration of Asians to the United States, however, and the resulting assimilation and acculturation, drinking may be increasing, though it is still lower than for other ethnic groups.

Both Chinese and Japanese Americans, who have minimal arrest records (according to FBI statistics), are, if arrested, most likely to be charged with an alcohol-related violation, such as "driving under the influence" or "drunkenness." These alcohol-related offenses accounted for 27.8 percent of Japanese American arrests in 1978 (Kitano in press).

Information about treatment of Asian alcoholics is scarce because of an apparent philosophy that the family can best take care of its members, no matter what the problem. In addition, Asian Americans underuse mental health facilities in part because of cultural sensitivity to stigma, fear of losing face, unawareness of existing services, and cultural and language problems (Kitano in press).

The provision of services to Asian Americans faces a number of obstacles. Most Asian Americans do not recognize alcohol as a problem except when it occurs in their own families. Then there is a tendency to deny it or hide it. And if the alcoholic is willing to go for treatment, the facilities may be inadequate because of cultural and language problems (Kitano in press).

The Gay Community

While precise estimates of the number of gay alcoholics and alcohol abusers are not yet available, clinical and community observations suggest that these numbers may be substantial. Ziebold (1980) has discovered possible factors involved in gay alcoholism and alcohol abuse. The social structure of the gay community encourages drinking. The gay bar is the community center, and studies have shown that the largest portion of social time is spent at bars or at parties where alcohol is available. Other factors center around stigma associated with both alcoholism and homosexuality. Research into all aspects of gay alcoholism is necessary for increased understanding and provision of sensitive and appropriate intervention.

Women

The decade of the 1970s has witnessed increased public concern about alcohol problems in women. While women have much in common with men with regard to alcohol-related problems, they have been found to differ from men in certain aspects of the distribution, patterns, antecedents, and consequences of these

problems (Wilsnack in press). Female alcoholics appear to run a greater risk of developing liver disease at an earlier age, after a shorter period of drinking (Galambos et al. 1972; Lelbach et al. 1974; Wilkinson et al. 1969), and presumably from a lower level of alcohol consumption (Krasner et al. 1977; Pequignot et al. 1974).

Historically, it has been viewed with less approval for a woman to misuse alcohol than for a man. This double standard manifests itself through a variety of well-defined, mutually exclusive roles for men and women. Because of the specific ways in which excessive drinking may affect the performance of these roles, attitudes toward male and female alcohol misuse are probably more strongly held and defended than dual standards for other aspects of behavior (Sandmaier 1980).

Women alcoholics have been reported to be anxious and depressed, with histories of unhappy childhoods, suicide attempts, broken or otherwise poor marriages, and other stressful life events (Knupfer in press). It is difficult to attribute these correlates to alcoholism per se in the female when the social response to female alcoholism appears negative. The stigma attached to the female alcohol misuser more often encourages a woman to hide her alcoholism than to seek help. Frequently, family support is absent, with those close to the alcoholic woman prone to ignore or play down her condition. Men are more likely to leave their alcoholic spouses than are women (Sandmaier 1980), and there is a high prevalence of alcoholism or problem drinking among the husbands of alcoholic women (Knupfer in press).

Many studies have attempted to illustrate the complicity of the wife in the husband's alcoholic process. In the analysis of contrasting images of husbands and wives of alcoholics, a majority of the wives were depicted as at fault while most of the husbands were to be pitied (Knupfer in press).

Many researchers have observed that problem drinking in women is often a response to stressful life events (Belfer et al. 1971; Braiker in press; Cramer and Blacker 1966; Fort and Porterfield 1961; Hoffman and Noem 1975; Knupfer in press; Lisansky 1957; Lolli 1953; Tamerin et al. 1976; Wall 1937; Wilsnack 1973). They generally concur that the development of problem drinking in women is more directly linked to specific life-stress events or physiological stressors than it is in men (Braiker in press).

Conflict about sex roles is one such source of stress. While some women may drink in response to stress associated with narrow and confining roles, the change in traditional sex roles has also been accompanied by stress. Family demands are often compounded by the pressures of greater occupational stress and the demands of multiple, conflicting role expectations (Johnson et al. 1977). The relationship of sex roles to problem drinking and alcoholism requires further empirical study.

There is a higher rate of alcoholism among employed women (Schuckit and Morrissey 1976), and Johnson et al. (1977) reported that married women who are employed have significantly higher rates of both problem and heavier drinking than either single working women or housewives.

Changes in women's roles may also bring more women into public drinking settings, either for personal or job-related entertainment (Wilsnack in press). One contextual influence on women's drinking may be the number and sex of her drinking companions. There is some evidence that women drink more in the company of men, particularly in large mixed-sex groups, than in the company of other women (Harford et al. 1980; Rosenbluth et al. 1978). Living with a heavy drinker may also increase a woman's risk of developing drinking-related problems.

What, if any, is society's responsibility to the alcoholic woman? There is, first and foremost, a great need for improvement in the family and emotional support system of the alcoholic woman (Gomberg 1976). Husbands of alcoholic women have not been the subject of much research, and the information that has been obtained has come mainly from wives' reports, clinical impressions, or unspecified sources (Knupfer in press). (See Jacob et al. 1978 for a thorough review of this topic.) A general lack of interest in their wives' treatment has, however, been noted.

Studies have confirmed that female alcoholics are at high risk for abuse of other drugs. James (1975), in a survey of female Alcoholics Anonymous members, found that 34 percent of the women had abused drugs in the past. Nearly all the drugs had been prescribed by physicians.

Employers sometimes play a role in the female alcoholic's attempts to camouflage her problem. It has been believed that employers have traditionally tolerated a woman's alcohol-related behavior, or when no longer possible to do so, terminated her, rather than confront her about her drinking. Chatham et al. (1979), however, in a study of three employee assistance programs, found the number of employer referrals for females to be high enough to challenge this belief that female alcoholics are not identified by employers.

Although still low relative to that directed at men, alcohol advertising aimed at women has increased in recent years (Wilsnack in press). In the mid-1970s the distilled spirits industry targeted women as one of five high-priority submarkets (Gavin-Jobson Associates 1976), with some of this advertising promoting new products believed to have special appeal for women.

Finally, even if a woman is able to ignore the social stigma associated with her acknowledgment of a drinking problem, adequate treatment facilities for women with alcohol problems have not always been available. In most cases, even if available, treatment is an impossibility for the alcoholic mother, particularly if her children are small. Few alcoholism facilities provide or arrange for child care, and the woman is often trapped by a system that forces her to care for her children when she is emotionally and physically unable to do so (Sandmaier 1980).

The last few years have witnessed increased attention to the special needs of the alcoholic woman. Researchers are exploring the treatment needs of the female alcoholic (Beckman 1975; Blume 1978; Calobrisi 1976; Sandmaier 1980; Schuckit 1976; Tamerin et al. 1976; Trice and Beyer 1979; Wilsnack in press).

One innovative concept is the Family Rehabilitation Coordinator (FRC) Program developed by the University of California Extension and funded by NIAAA to address the special needs of recovering alcoholic women with children. The FRC spends time in the home with the recovering mother and her family, assisting with household organization and developing internal support systems. The program philosophy is to support the entire family in recovering and to assist family members in adjusting to the mother's sobriety (Davis and Hagood 1979).

Family

The disruptive effect of alcoholism on the family is an area of growing concern. Two closely related aspects of this problem are of particular concern: the relationship of alcohol and family violence, and the children of alcoholic parents.

While family violence is by no means a new concept, it has not always been associated with alcohol consumption. Because of the nature of family violence, including child abuse and spouse abuse, events involving these incidents are usually not reported. Although more attention has been focused on these areas in recent years, the role of alcohol in these incidents is not known. Some research indicates that family disputes are not usually related to alcohol use and abuse (Zacher and Bard 1977), while other research suggests that alcohol problems in these families are significant. In a survey of family dispute cases handled by the Los Angeles Police Department (Emerson 1979), investigators reported that nearly half of the incidents involved alcohol or drugs. To date, most studies of family violence have not distinguished among alcoholism, problem drinking, intoxication, drinking in any amount, the violent episode, and different incidents of violence in the family (Morgan in press).

Spouse Abuse.

Although there are no overall statistics linking alcohol use with spouse abuse, individual reports have suggested a relationship. In her review of the subject, Hindman (1979) cited two studies.

A Minnesota study of nearly 100 abused wives who called a community agency hotline found that 35 percent of the abusing men were daily drinkers and another 10 percent were weekend drinkers. In addition, 71 percent of the abused women said they also drank, with most reporting frequent drinking (Carder 1978).

Another survey of women who sought emergency aid in Ann Arbor, Mich., following abuse by their husbands showed that 60 percent of the husbands were excessive drinkers and that more than 66 percent of the assaults involved some drinking (*Congressional Record* 1978).

Some persons seem to hold the view that alcohol abuse does not cause marital violence—that the link is not one of cause and effect. An hypothesis is that intoxication is a disavowal technique used by abusive husbands. Intoxication may be perceived by the drinker and possibly others as well as a "time-out" period during which normal rules and standards for behavior are diminished (Gelles 1972; Hindman 1979).

Violence is not an isolated phenomenon affecting only one victim in the family. The husband who beats his wife is often a battering father; and he, in turn, may be the target of violence from his wife and even his children (Hindman 1980). Alcohol has been studied as a factor in such violence from a number of research perspectives including: individual psychopathological behavior (Faulk 1974; Halleck 1976); personality disorders in either victim or perpetrator (Shainess 1977; Snell et al. 1964); interpersonal family dynamics (Farrington 1975; Roy 1977); violent society or subculture (Steinmetz and Straus 1973, 1974; Straus 1973); and the overall sociohistorical structure of society (Dobash and Dobash 1979; Marsden 1978; Pagelow 1977). The importance of alcohol and the role it plays in family violence varies in each of these approaches. Methodological variations and population differences contribute to the difficulty of definitive analysis (Morgan in press).

Child Abuse.

As with spouse abuse, the exact relationship between child abuse and alcoholism is not known. Estimates suggest that alcohol may play a role in as many as one-third of all reported cases of child abuse (Kempe and Helfer 1972). A study conducted at an Arkansas community-based alcoholism treatment center reported that a number of the alcoholic parents studied were child abusers (Spieker 1978). A project aimed at early detection of family pathology in a medical outpatient clinic at the Long Beach Naval Hospital found relationships between alcohol abuse and child abuse (Behling 1978). Child abuse also appears to be related to spouse abuse.

Alcohol has been linked to child sexual abuse (Epstein et al. 1977). In a study of father-daughter incest, Julian and Mohr (1980) report problem drinking as a factor in incestuous families.

Among socioeconomic factors correlated with incest, income has been found to be the most closely related; race appears to have little significance (National Center on Child Abuse and Neglect 1981). The median income of both abusive and incestuous households is considerably lower than the median income of all U.S. families. Data further indicate that both abusive and incestuous households are larger than found in the general population (Julian and Mohr 1980).

Children of Alcoholic Parents.

Children in alcoholic families are at increased risk for a number of problems. These problems include lower IQs, hyperactivity, and psychological and emotional problems. These children are at significant risk for alcoholism in later life. Alcoholism within the family is also clearly associated with both physical and emotional child neglect. Children in alcoholic families are often ignored, disciplined inconsistently, and given few concrete limits and guidelines for behavior (Hindman 1977).

The effects of having been members of an alcoholic family do not cease when the children marry and leave home. Young adults from alcoholic homes frequently retain adaptive styles and personality characteristics which they had learned in order to survive (Deutsch et al. in press). Children from alcohol-abusing families have been reported to be twice as likely to develop an alcohol problem as children of nonalcoholics (Goodwin et al. 1973).

Among families experiencing alcohol problems, a high rate of divorce is also reported. Studies summarized by Schuckit and Morrissey (1976) indicated a divorce rate of 40 percent. This is significantly higher than for the general population.

Youth

Adolescent drinkers list their own homes as the most frequent drinking location, with drinking companions most often being friends or peers, followed by parents or relatives (Rachal et al. in press). Surveys of adolescent drinking patterns indicate that most teenagers are introduced to alcohol at home in the presence of their parents (Davies and Stacey 1972; Maddox and McCall 1964). Some studies show that teenagers whose early use of alcohol occurs with peers rather than with parents may experience more problems with alcohol (Harford and Speigler in press).

The favorite drinking setting among adolescents is outside the home with peers (Rachal et al. in press). Heavier drinking appears to be related to drinking in settings outside the home, with peers, and not with adults. While the prevalence of drinking alone is, in general, low, it is directly related to high levels of drinking (Rachal et al. in press).

Alcohol use among adolescents is also related to peer influence, specifically peer attitudes toward drinking and peer drinking behavior (Rachal et al. in press). A number of studies have analyzed the relationship between use of alcohol by adolescents and use of alcohol by their peers. These studies consistently reveal that adolescent drinking becomes more prevalent, frequent, heavier, or more problem related as the extent of drinking among friends increases (Harford and Speigler in press).

Rachal et al. (in press) found in their survey of adolescent alcohol use that teenagers' drinking is related to their perception of their parents' alcohol use, with abstainers more likely to report having abstaining parents. Further findings indicate that there is consistency between teenagers' drinking and their parents' approval or disapproval of drinking. Fewer abstainers reported parental approval, and more reported parental disapproval, while the situation was almost exactly reversed for heavier drinkers.

Additional correlates fall into the sociocultural realm and include size of community, socioeconomic status, and religious affiliation. In general, adolescents in larger urban communities tend to use alcohol more than those in smaller rural communities and drinking rates in the Northeast and North Central regions are higher than those in the South (Braucht in press; Harford and Speigler in press; Rachal et al. in press). These regional differences have been shown to relate to variations in religious affiliation, ethnicity, and other demographic characteristics of subgroups (Cahalan and Room 1974).

Religious affiliation is consistently related to adolescent alcohol use, with drinking least prevalent among teenagers affiliated with fundamentalist denominations such as Mormons and Baptists and most prevalent among liberal Protestants, Catholics, and Jews. Of the latter three denominations, use is heaviest among Catholic youth and lowest among Jewish teenagers (Rachal et al. in press).

Adolescent problem drinking is associated with several parental, peer group, and other environmental factors. Compared with those who are not problem drinkers, adolescent problem drinkers are more likely to be in an environmental context in which (1) they feel more disagreement between what their parents expect of them and what their friends expect of them; (2) their friends seem to have relatively more influence on them compared with the influence their parents exert; (3) there is less parental

disapproval for their drinking; (4) there are more peers who model problem drinking and other problem behavior for them; (5) there is more peer approval of their drinking; (6) their parents are less involved with them and their lives; (7) their parents are heavier drinkers themselves; and (8) their parents are less positive or affectionate toward them (Braucht in press).

There are also several personality correlates associated with adolescent problem drinking. Relative to nonproblem drinkers, problem drinkers (1) are more tolerant of deviance; (2) attach less importance to religion; (3) are more apt to weigh the positive aspects of drinking more heavily than the negative aspects; (4) place lower personal value on academic achievement; (5) place more value on self-determination and autonomy from parents; and (6) hold lower expectations of achieving academic success. Some studies have found problem drinkers to have more personal problems and to be more alienated (Braucht in press).

Characteristics of heavier and problem adolescent drinkers include pessimism, unhappiness, boredom, aggressiveness, frustration, impulsiveness, distrust, cynicism, irresponsibility, inflexibility, and dissatisfaction (Rachal et al. in press).

Alcohol use among adolescents appears to lead to other problem behavior, with some studies indicating a significant correlation between antisocial or delinquent behavior and adolescent drinking (Braucht in press; Donovan and Jessor 1978; Jessor and Jessor 1975). Heavy drinking has also been linked to precocious sexual behavior, poor school performance, problem behavior in the classroom, problems within the family, number of classes cut, and higher school dropout rates (Braucht in press).

Economic Costs

Assessment of the economic costs that alcoholism and alcohol use impose upon society is limited by a lack of definitive measurements. Individual researchers, differing in their interpretation and analysis of the data, report varying estimates.

Based on an analysis of six major categories, Berry et al. (1977) estimated that alcoholism and alcohol misuse cost the United States approximately $43 billion in 1975. Six areas were analyzed: lost production, health care expenditures, motor vehicle accidents, violent crimes, fire losses, and social response (table 1).

The $42.75 billion cost attributed to alcoholism and alcohol misuse has been criticized as both inflated and conservative. Those who argue that this amount overcompensates support the premise that none of the costs in the six categories analyzed may be attributed unconditionally to alcohol misuse (McGuire 1980). Other researchers contend that the omission of several groups, including males older than 59 and younger than 21, "skid-row" alcoholics, and women in all age brackets, results in serious understatement (Schifrin et al. 1980). A study commissioned by the Alcohol, Drug Abuse, and Mental Health Administration to provide an indepth analysis of alcohol-related costs to society is currently in progress.

TABLE 1
Economic Costs of Alcohol Misuse and Alcoholism in the United States, 1975

Item	Cost (in Billions)
Lost production	19.64
Health and medical	12.74
Motor vehicle accidents	5.14
Violent crime	2.86
Social responses	1.94
Fire losses	0.43
Total	42.75

SOURCE: Berry et al. (1977).

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5. Prevention of Alcohol-Related Problems: Strategies and Activities













Within recent years, the prevention of alcohol-related problems has emerged as a key issue not only in the United States but internationally as well (Moser 1979). Policymakers from throughout the world are seeking ways to reduce alcohol-related problems and to decrease the personal, social, and economic costs associated with them.

The emerging focus on prevention appears to be related to a number of factors. Of considerable importance is the realization that the treatment system alone cannot be expected to deal with all alcohol-related problems. Epidemiological research of the past several decades has consistently revealed a wide range of drinking problems in addition to alcoholism that have serious personal and social implications (Cahalan et al. 1969; Cahalan 1970; Cahalan and Room 1974; Clark and Midanik in press; Rachal et al. in press; Straus and Bacon 1953).

General public health mandates have also contributed to growing interest in prevention of alcohol-related problems. In these mandates, emphasis has been placed upon health problems associated with differing lifestyles, upon wellness philosophies, and upon possible interactions between social system factors and the health of various populations.

This growing concern with prevention of alcohol-related problems has led to renewed international interest in possible strategies. Increased efforts to design, implement, and evaluate prevention programs have also been apparent. In the present chapter, recent work on prevention strategies and activities is reviewed.

National and International Developments

Recently, the Surgeon General of the United States called attention to the need for a reduction in alcohol-related problems. In *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention* (Institute of Medicine 1979), alcohol abuse was regarded as having major implications for accidents, suicide, homicide, family disruption, schooling, work, and chronic diseases.

Renewed interest in the establishment of alcohol problem prevention programs is evident in the Alcohol, Drug Abuse, and Mental Health Administration's (ADAMHA) first conference on prevention in September 1979, the work of the President's Commission on Mental Health, and the recent publication of ADAMHA's draft policy for prevention program activities in the coming years (Klerman 1980).

In 1979 the World Health Organization (WHO) completed a 3-year project on preventing alcohol-related problems. The project, which received financial and technical assistance from the NIAAA, was carried out with the cooperation of the countries in response to their widespread concerns about this issue. Its achievements included:

1. developing a network of collaborators in more than 80 countries who had scrutinized prevention programs in their own and other countries;

2. preparing a WHO document entitled "Prevention of Alcohol-Related Problems: An International Review of Preventive Measures, Policies, and Programs, Part I"; and

3. preparing a series of national and subnational profiles of alcohol use, alcohol-related problems, and preventive measures, policies, and programs.

Alcohol-related problems were included among the 15 most important preventable health problems in the Department of Health and Human Services discussion of prevention objectives for the year 1990. Specific 10-year goals associated with reducing the incidence and prevalence of alcohol-related problems were formulated for (1) improving health status, (2) reducing risk factors, (3) increasing professional and public awareness, and (4) improving services and protection.

The objectives associated with the goal of improving health status included reductions in the rates of cirrhosis mortality, accidental death and injury, and alcohol-related birth defects. Reduced risk factor objectives were involved with decreases in adult alcoholism and in problem drinking among 12- to 17-year-olds. Stabilization of U.S. per capita consumption was also an objective.

Objectives associated with increased professional and public awareness were concerned with increased public recognition of the relationship between patterns of consumption and fetal abnormalities as well as the relationship between excessive consumption and head and neck cancers. Increases in occupational alcoholism programing were targeted as objectives for the improved services and protection goal.

Major Research Models

Approaches to the prevention of alcohol-related problems have been derived mainly from three important models. These are as follows: (1) The Public Health Model; (2) The "Distribution of Consumption" Model; and (3) The Sociocultural Theoretical Model.

The Public Health Model.

The public health approach to alcohol problems is of relatively recent origin, dating from the early 1960s with the report of the Cooperative Commission on the Study of Alcoholism (Plaut 1967) and the formation of the National Center for Prevention and Control of Alcoholism within the National Institute of Mental Health. Basically, the model involves three points of intervention: the host, the agent, and the environment. The "host" refers to the individual and his or her knowledge about alcohol, the attitudes that influence drinking patterns, and the drinking behavior itself. The "agent" refers to alcohol, its content, distribution, and availability. The "environment" refers to the setting or context in which drinking occurs and the community mores that influence drinkers (U.S. Department of Health, Education, and Welfare 1978).

The Prevention Division of NIAAA has been concerned primarily with projects involving the host, with some recent work concerned with environmental and contextual issues. A central feature of the public health model's approach to disease prevention and health promotion is a device called the research demonstration project. Current NIAAA funded research demonstration projects are discussed in greater detail at a later point in this chapter.

While the public health model has stimulated considerable research and program activities, it is not without its critics. Epidemiological research, a variety of ethnographic studies, and studies to determine sentiment and perceptions regarding alcohol problems have repeatedly pointed to alcohol use and abuse as social, psychological, and cultural phenomena that are beyond the purview of the public health model, or that at least complicate enormously its application to alcohol problems (Blane 1976; Conrad and Schneider 1980; Room 1974, 1979*b*). Complexities in social definitions of prevention have led to the proposal of several prevention intervention models, not all of which fit neatly into the traditional public health model (Klerman 1980). Critics question whether the health field is appropriate for or capable of preventing alcohol problems that may be more social than medical in nature (Beauchamp 1976; Conrad and Schneider 1980). Despite criticism, however, the public health model has provided an array of opportunities for prevention activities which public health agencies have yet to explore fully.

The Distribution of Consumption Model.

Recently, the relationship between the average level of consumption in a population and the percentage of heavy consumers has been debated at length. Bruun et al. (1975) have examined this question in some detail, with particular reference to the ideas originally formulated by Ledermann (1956) that a relationship exists between per capita consumption and the prevalence of heavy use. Bruun et al. (1975) argue that "changes in the overall consumption of alcoholic beverages have a bearing on the health of the people in any society." They conclude that "heavy users of alcohol have a substantially elevated risk of premature death," and that "the etiological importance of alcohol is clear with respect to deaths from cirrhosis of the liver."

Ledermann's argument and the conclusions of Bruun et al. have since been considered in detail by several investigators (Cartwright et al. 1977; Duffy 1977; Duffy and Cohen 1978; Parker and Harman 1978; Schmidt and Popham 1978*a*; Skog 1977, 1978). The central notion, that there exists a relationship between per capita consumption and prevalence of heavy use, seems to have some validity.

Parker and Harman (1978) point out that the correlation between health damage and drinking patterns may be more important. These in turn may be dependent on a variety of personal, social, demographic, and cultural factors. Mäkelä (1978) concludes from a review of consumption levels and the social consequences of drinking that important cultural variations in the incidence of social consequences exist which are unrelated to the average consumption level. Certain alcohol researchers, such as Schmidt and Popham (1978*b*), and indirectly Beauchamp (1976), have argued that the relationship between per capita consumption and the numbers of heavy drinkers at risk for serious medical complications is clear enough to warrant government intervention to restrict availability. However, it is far from clear what actions by government would be appropriate. Restrictions in retail outlet distribution, increases in price, imposition of conditions of sale, and limitations on alcohol production all have been explored, though so far without substantial findings of effectiveness except at very large scales that have enormous political and unforeseen social consequences (Bruun et al. 1975; Medicine in the Public Interest 1979).

Reviewing research on control measures, de Lint (1976) concluded that minor variations in density, location, and type of outlet; hours and days of sales; or many other regulations involving the context of drinking have no measurable effect on the rates of alcohol consumption. Rapid changes, however, relaxing several controls seem to facilitate significant increases in consumption rates. Popham et al. (1976), reviewing the effects of legal restraint on drinking, draw attention to three apparent points of agreement: (1) highly restrictive controls on accessibility lead to lower consumption and fewer alcohol problems; (2) such controls are unlikely to be implemented in the absence of substantial public support; and (3) such controls are apt to involve a variety of social and political costs that eventually will be perceived to outweigh their benefits.

Considerable controversy surrounds the issue of the total impact of tightening or relaxing legal controls. In England and Wales, for example, the 1972 Report of the Departmental Committee on Liquor Licensing (the Errol Report) made more than 100 recommendations that would represent a relaxation of regulations. The public health authorities were vigorously opposed and highly critical of the recommendations (Robinson 1974). In Scotland, the Departmental Committee on Liquor Licensing commissioned a similar paper known as the Clayson Report in 1973. The report argues that, although the old objective of reducing alcohol misuse by restricting opportunities to purchase and consume alcohol may have been valid when disposable incomes were modest, it is not valid today when disposable incomes are large and increasingly spent on alcohol.

Countries vary considerably in regulating the times that outlets may sell alcoholic beverages. The effects of limiting the days and hours of sale of alcoholic beverages have not been adequately assessed. Some have contended that such limitations reduce drunkenness and consequent problems. Others have urged extending opening hours of sales places, arguing that reduced pressure to drink will result. An attempt was made to evaluate the latter in Victoria, Australia, where the closing time for places selling alcoholic drinks for consumption on the premises was changed from 6 p.m. to 10 p.m. No change was found in the overall total of personal injuries in motor vehicle accidents or in the percentage occurring from 6 p.m. to 11 p.m., but the accident peak hour shifted from 6–7 p.m. to 10–11 p.m. (Raymond 1969).

Between March 1 and October 31, 1977, Alko, the government beverage control system, carried out an experiment in an industrialized zone in Finland where the 10 Alko stores were closed on Saturdays. The changes in retail and licensed sales, arrests for drunkenness, and public disturbance were monitored and all were found to have decreased. No observed increase in the use of illicit alcohol occurred during the trial (Säilä 1978).

Popham et al. (1976), reviewing the effects of controls on several places permitted to sell, note two divergent opinions. One holds that an increase in opportunities to drink results in increased drinking and drunkenness; the other that widespread availability will promote moderate and civilized drinking. Summing up the evidence, they conclude that the prevalence of drunkenness is not dependent on the number of outlets in the population initially examined. However, they concede that this conclusion is not warranted where extremely low accessibility exists, or where such a situation suddenly changes to one where alcohol is easily accessible (Kuusi 1957; Mäkelä 1975; Amundsen 1965).

Increasing prices has been suggested as a preventive measure to reduce purchase and therefore consumption. The resulting reduction in demand would be expected to be followed by limitation of production. Reviews of evidence by Popham et al. (1974), Bruun et al. (1975), and Österberg (1975) indicate that a rise in alcohol prices has generally led to a decrease in alcohol consumption, and a rise in the income of consumers has generally led to an increase in alcohol consumption.

More recently, Parker and Harman (1978) have argued that income rather than price is the main determinant of demand. Moreover, demand for spirits and beer is not sensitive to price (price inelastic) and heavy drinkers are likely to have inelastic demand curves. As a result, increases in price are not likely to reduce consumption. Schmidt and Popham (1978*a*), however, argued that heavy drinkers do have elastic demand curves as evidenced by the finding of an inverse relationship between price and cirrhosis of the liver.

Ornstein (1980), however, was unable to support Parker and Harman's conclusions concerning the dominance of income effects over price effects and the assumed inelastic demand for distilled spirits. While supporting Schmidt and Popham's contention that consumption is sensitive to price changes, Ornstein found the sensitivity to vary across beverage type. In addition, Ornstein concluded that the effectiveness of price changes in reducing heavy drinking remains to be tested. Ornstein summarized:

The main lesson to be learned from this survey is that demand estimation is a difficult and inexact business. The results are strongly affected by the data and econometric techniques used. One should be cautious before adopting the results of any given study, and especially cautious if such results are to be used as a basis for public policy.

With regard to age limitations on drinking, only a few relevant evaluative studies have been carried out. An unpublished study by Schmidt showed that a change in drinking age from 21 to 18 in Ontario led to a greater increase in alcohol consumption in licensed premises than was expected. Surveys of college and high school pupils also revealed reported increases in drinking, especially in bars and taverns (Smart and Schmidt 1975). Increased rates of road accidents among young people as a result of lowering the legal drinking age limit have been reported (Schmidt and Kornaczewski 1975; Williams et al. 1974; Douglass et al. 1974). Smart (1977) concluded from his review that good presumptive evidence exists that laws lowering age limits for purchase and consumption of alcohol lead to increased alcohol consumption and alcohol problems among young people. The findings of Whitehead et al. (1975) were similar. Barsby and Marshall (1977), however, found that apparent increases in consumption of distilled spirits after reductions in minimum legal purchasing age were not statistically significant.

Another example comes from the United States, where a campaign that began in 1970 to grant full drinking rights to the newly enfranchised 18- to 20-year-olds resulted in 24 States' reducing the minimum age limit for alcohol consumption from 21 to 18, 19, or 20 by 1973. In 1976, Minnesota raised the age from 18 to 19 years, and since then several States have followed. Two Canadian Provinces—Ontario and Saskatchewan—have also recently raised the minimum age from 18 to 19 years. This reversal of the trend seems to have been prompted by an increase in alcohol-related driving accidents and fatalities among 18- to 20-year-olds and by a continuous rise in juvenile crime.

In general, then, prevention strategies involved with reducing per capita consumption are continuing to receive research attention. Present results indicate that the questions and issues raised are exceedingly complex, and specific answers are not yet at hand. Smart (1977, 1980), for example, has recently raised questions about the relationship between availability and alcoholism rates. Smart's review suggested that income and urbanism are more closely related to consumption and alcoholism rates than is availability. Methods for reducing per capita consumption that are not only effective but free of undesirable long-term consequences do not appear to exist at the present time.

The Sociocultural Model.

The sociocultural approach emphasizes the relationship between alcohol problems and the normative patterns of alcohol use within a society (Blane 1976). Problems of alcohol are considered likely to occur when the norms are conflicting. Problematic conflicts are viewed as personal ambivalence and anxiety about drinking that lead to alcohol abuse; juxtaposition of drinking events and social situations that generate social conflict and problematic consequences (Room 1977*a*); or as norms which in themselves encourage excessive and problem drinking. "Norms" can be interpreted through interactions between informal social controls and more formal regulations (Gusfield 1975). In the sociocultural approach alcohol problems may be viewed at levels ranging from the individual to the community (Cahalan and Room 1974) to the national and international (Frankel and Whitehead 1979). Alcohol problems may be seen as difficulties in their own right; the properties of alcohol combined with the sociocultural milieu generate alcohol problems. Or alcohol problems may be seen as one set of problems in a cluster of other problems that occur in the individual's relationship to immediate and more distant social structures (Jessor and Jessor 1980). Implications for prevention projects are as many and as varied as the many turns of theory.

The relationship between the sociocultural and the distribution of consumption models remains unclear, though attempts are under way to make the two sets of theory compatible (Edwards 1980; Frankel and Whitehead 1979). The alcohol problems field has grown so complex that fresh assessments are under way to try to make sense of the variety of theories and findings for purposes of establishing better prevention policy (National Academy of Sciences 1981). Despite these efforts, powerful explanations of the causes of alcohol problems have yet to be found that are widely accepted and clear as to their implications for prevention efforts.

The Problem-Specific Approach

Political and theoretical issues have led alcohol researchers to investigate pragmatic orientations toward the development of prevention interventions. With regard to the political issues, both Seeley (1980) and Room (1980) recommended acknowledging that prevention activities are essentially political in nature and noted that alcohol problems are interdependent complexes, intervention into which may yield mixed blessings.

Taking this view implies a rather widespread debate among various public and nonhealth agencies, as well as health agencies, over which problems to approach and in what ways. Room (1977*a*,*b*, 1979*a*) has explored the conceptual basis for pursuing a problem-specific approach to dealing with problems of alcohol. Major problem categories are identified empirically and eclectically, based on observation and on the results of epidemiological and other research into patterns of drinking by various groups and the problems that these patterns entail. Six major problem domains are identified: (1) problems of chronic illness; (2) acute health problems; (3) problems of demeanor while or after drinking; (4) casualties, injuries, death, and property loss (Aarens et al. 1977); (5) problems of the default of major social roles; and (6) mental or existential problems (Room 1977*a*).

Approaches to dealing with the problems and strategies for intervention are to be based on the best knowledge available, drawn both from research and from experience, and upon criteria that address the interests of the polity, of which the health agency is one but not the exclusive arbiter. Some preliminary suggestions for choice of targets include: the severity of the problem; the extent of it (the numbers involved or the frequency of occurrence; trends in occurrence; the centrality and determinancy of alcohol's involvement in the problem; impacts on others besides the drinker; the effectiveness of potential prevention strategies; and ethical factors in potential prevention strategies (Room 1977*a*).

Within this approach is the pragmatic injunction that the approach taken be as specific as possible about what is to be prevented, and that the specificity be manageable within the context of a particular project. Such an injunction does not solve the problem of policy bias or political consequences, nor does it provide knowledge and theory where neither exists. It does focus, however, upon specific and realistic activities that are possible within the purview of a given effort.

Current Prevention Projects

Alcohol prevention projects are useful devices for bridging the gap between the theoretical constructs discussed above and the knowledge about alcohol-related problems which is gained through research and delivery of treatment services. Such projects serve the dual purpose of fulfilling service needs to individuals and communities with alcohol problems and of reporting their findings about the nature and possible resolution of these problems back to researchers and policymakers.

The main focus of the prevention demonstration program has been on projects which "test specific hypotheses about current and new approaches aimed at minimizing the occurrence of alcohol-related problems through means other than treatment and rehabilitation services" (National Institute on Alcohol Abuse and Alcoholism, 1979). These projects are termed "demonstration" since they are testing methods, strategies, and approaches as a primary task rather than providing prevention services as a direct mandate. The specific examples that follow have been chosen because they are conceptually linked to the approaches mentioned. These descriptions are organized by the type of agency that sponsored the demonstration project.

Projects for Youth in Educational and Service Organizations.

The general aim of alcohol demonstration projects in educational and science organizations is to prevent or reduce the incidence of problems of alcohol use and abuse. The target of the efforts is the individual, defined most often as a member of the general population for which the host institution has responsibility. Such projects rely upon knowledge-attitude-behavior models of change for their intervention efforts. Alcohol prevention demonstration projects directed at youth are sponsored by primary and secondary public schools; private schools, colleges, and universities; youth organizations such as the Boys' Clubs of America and the YMCA; and treatment organizations that have youth service components. Thirty-seven of 46 prevention demonstration projects funded by the NIAAA have or have had youth prevention projects based either solely or primarily in these sites. Demonstration projects at the State level have emphasized locating projects in organizations whose primary responsibilities are to work with youth. Illinois, for example, recently selected 23 youth-serving organizations as project sites to be included in its 34 State-funded alcohol problem prevention demonstration projects. Public schools, in particular, have long been popular as sites for evaluating youth-oriented prevention demonstration efforts (Williams et al. 1968). Such projects make use of a multicomponent approach rather than information dissemination only. Emphasis on alcohol information in the curriculum, increased participation of target audience members in project activities, and experimentation with specialized settings for alcohol-related education and service efforts are characteristics of major projects in recent years (Wittman in press).

A new $10-million program of grants to deter the use of alcoholic beverages and also smoking among children and adolescents was initiated in 1980 by the Centers for Disease Control. The program, which is continuing under the auspices of the Center for Health Promotion and Education, CDC, supports demonstrations and evaluations of community and school-based programs, and fosters cooperative relationships among various health and community organizations.

Two NIAAA projects exemplify developments in curriculum areas: the Education Service District (ESD) #121 in Seattle, Washington, and the Cambridge-Somerville Program for Alcoholism Rehabilitation (CASPAR). The former combines alcohol information with educational theory to provide increasing increments of alcohol-related material by grade to match cognitive and affective student development. The latter places its emphasis on intensive teacher training and on training of peer leaders to transmit curriculum materials. The educational materials utilized in each of these projects discuss the physiological and psychological effects of alcohol, explore beliefs about alcohol use, examine patterns of alcohol consumption, and promote the importance of responsible decisions concerning drinking (Wittman in press).

Organizational and individual participation are encouraged so that personal and intellectual involvement in discussions, self-awareness exercises, assertiveness training, and role-playing activities will improve attitudes about alcohol and promote better management of self and others in alcohol-related situations. While there is little concrete assessment of the participation factor, project directors and school administrators have considered it a major point of project success. The ability to obtain this participation depends on the involvement of sponsor administrators and students in the planning stage prior to implementation; the development of a "base" of contacts including peer leaders to assist with project activities; and the project staff's use of interpersonal skills in consulting and training the teachers and peer leaders.

The experimentation with alcohol education settings has developed from program staff aims of increasing the range of their audiences. While classroom curriculums will meet the minimum alcohol educational needs, a number of alternative programs such as special alcohol education classes, small group sessions for at-risk youth, individual counseling meetings, media campaigns, and restructuring of school/organization physical environments are better suited to reach specialized audiences such as youth with problems. Specialized settings can also stimulate better use of time and offer more attractive social life to less troubled participants.

Evaluation of projects directed at youth in educational and service organizations has not been well developed for several reasons: the projects are still ongoing; the objectives of the projects were not operationalized into measurable variables; the relationship of information on behavior changes and opinion changes to behavior change is complex; and changes in drinking behavior are not easily interpreted in terms of cause and effect relationships. Generally, quantitative evaluation of projects suffers from an absence of standardized instruments for reporting drinking behavior, a lack of validity and reliability testing, and little compatibility between instruments used in varying projects (Wittman in press). The evaluation aspect of prevention demonstration projects needs to be upgraded through the development of carefully designed standardized instruments and rigorous data-collection methods.

Mass Media and Communications Organizations.

Use of mass media for prevention demonstration projects has taken several forms: public information campaigns alone; public information campaigns in conjunction with community organizing and service outreach prevention activities; and concentration on the content and programing of alcohol portrayals in various media.

With regard to public information campaigns, the use of television, radio, and print media to broadcast prevention messages has been especially vigorous in the past decade, particularly in the early and middle 1970s. Planned national campaigns have been sponsored by the National Council on Alcoholism, the National Safety Council, the National Congress of Parents and Teachers, the National Institute on Alcohol Abuse and Alcoholism, the National Highway Traffic Safety Administration, the U.S. Jaycees, various insurance companies, private industry, and the Distilled Spirits Council of the United States. The campaigns have emphasized acceptable and unacceptable uses of alcohol, health hazards, the problems of drunkenness, the need for moderation in drinking, and the need for action on drunk driving.

The observed effects of these campaigns for reducing alcohol problem behavior have thus far been disappointing. Blane and Hewitt (1977) stated that generally for these campaigns "the effects of public education are limited to increasing knowledge and reinforcing established attitudes or behavior patterns." Drunk-driving programs using a variety of information strategies have not been noticeably effective in reducing drunk driving or reducing crashes (Cameron 1978; Swinehart 1972). Kinder (1975) and Brecher (1972) found that tobacco and drug campaigns may have resulted in people's switching from one type of tobacco to another or in substituting one drug for another; Kinder observed that, in any case, drug and alcohol programs have generally been ineffective in bringing about attitude change. A special California campaign, using purchased media time in an effort to alter drinking behavior, similarly has been ineffective to date in changing knowledge, attitudes, or behavior, though the campaign has not yet been evaluated for its final phase (Wallack 1979).

However, these findings must be considered in light of the kinds of evaluations applied to the campaigns. Wallack (1980) observed that "the effects of mass media may be determined by broadening research questions so that a better overall view is gained."

The importance of taking a broader view is reflected in Zador's (1976) findings that traffic casualties declined during the period of Alcohol Safety Action Project (ASAP) activities in control as well as target communities. Room (1977*a*) speculated that "the ASAP program may have contributed to a general rise in public consciousness about alcohol-related casualties and a concomitant reduction in casualties, even though it had negligible particular effects in the target communities." Continued development of the public information campaign for prevention projects requires stress on specific problems, reinforcement of the media message through interpersonal contact, and more careful presentation of the message to the targeted audience.

Public information campaigns using community organizations and outreach can be found in several recent and current NIAAA-sponsored alcohol prevention projects. One such project sponsored by the NIAAA is the Fetal Alcohol Syndrome (FAS) Prevention Program sponsored by the California Women's Commission on Alcoholism. The FAS project proposes to issue warnings about the dangers of drinking during pregnancy to 1.8 million women of childbearing and near-childbearing age in Los Angeles County, through a combination of media campaigns and print material, and through contacts with women's groups, community groups, and health services throughout the county which will include presentations to physicians who have been organized through a major volunteer drive. Project organization requires close coordination between community organizers and those developing the theme and content of the media material and gives the organizers executive control over organizing activities within their geographically defined areas. Outcome evaluations will be based on an interrupted time-series design, using mail surveys and review of birth records at six times (1,000 sample per survey) to follow up women who give birth during the course of the project.

Another FAS project in Wisconsin, sponsored by the Wisconsin Association on Alcohol and Other Drug Abuse, reported outstanding success in reaching pregnant women through the use of volunteers and local alcohol councils. With a budget of $23,000, the project mailed information to 12,300 individuals and 3,400 professional and community groups; canvassed over 1,000 sites through 57 local alcohol councils; prepared, distributed, and aired public service announcements on 89 of 130 radio stations and 20 of 22 television stations, receiving donations in air time that equaled the project's budget.

A second type of community-involved public information campaign for alcohol prevention is currently being completed in three counties in the San Francisco Bay area. This project utilizes a media-community organizing approach, a media-only approach, and a control site comparison. It had three waves of television, radio, and billboard messages, each with several weeks of exposure. Evaluation of the impact of the campaign is achieved via an area household probability survey of a 500-person sample in each county. Interim evaluations showed no change in knowledge, attitudes, and behavior in the two counties exposed to the media campaign and identified some of the difficulties involved in alcohol problem prevention media campaigns. Only 60 percent of the respondents recognized the advertisements and only 20 percent indicated comprehension. Moreover, a high proportion thought they were seeing commercials promoting consumption. Finally, the program experienced conflicts over content with the California wine industry policies. These conflicts were resolved by altering the ads, with the criticized elements deleted. Because individual behaviors may not be affected as much as broader systems, there is a need to refocus the evaluation component to examine broader forums for opinion/attitude and behavior changes.

Another NIAAA-funded project is the NIAAA Public Education Campaign contracted to URSA/Pacificon. In an attempt to focus national attention and resources on the problems of alcohol abuse and alcoholism, this campaign is aimed at women and youth as its primary audiences. Utilizing television and radio public service announcements and printed materials, the mass media outlets at national, regional, and local levels are made aware of the effort. Next, the organizations and groups serving women and youth at each of these levels are involved in the development of program activities in support of the campaign. Evaluations designed to detect changes in attitudes and behavior regarding alcohol problems among women and youth are planned for each step of the campaign. It is hoped that it will be possible to supplement information provided to target audiences via the mass media with personal involvement in campaign-related project activities at local levels.

A different approach to the use of the media for alcohol prevention lies in urging more accurate portrayals of alcohol in media programing and in alcoholic beverage advertisements (Mosher and Wallack 1979*a*). This area is the focus of the Mass Media and Public Education Project sponsored by the Scientific Analysis Institute.

The Mass Media Project began with a study of media portrayals of alcohol for information on normative drinking practices and beliefs regarding the use of alcohol that can be analyzed for prevention content —both positive and negative. The investigators have developed an elaborate monitoring and coding scheme used to review selected examples of television shows, comic books, daily newspapers, magazines, college newspapers, and alcohol ads in magazines. From this monitoring has come a categorization of positive and negative media portrayals based on sensitivity to alcohol problem prevention issues. Prevention intervention occurs through "cooperative consultation" with the producers in the media, to convert negative portrayals to positive ones, based on the premise that the negative portrayals come more from habit and convention than from deliberate intent, and can be revised to improve both the portrayal and the esthetic quality of the article, show, or story. The investigators, due to their experience in working with media and their grounding in prevention concepts, have been successful, and particularly so with television. The project has progressed to consulting on scripts and proposing programs devoted entirely to alcohol use. More than 250 contacts have been made with writers, producers, and directors in the television industry. An advisory group of six influential television producers has been formed to explore industrywide standards for alcohol portrayals (Wittman in press).

Voluntary Organizations and Community Movements.

Past efforts at the national level involving voluntary organizations in prevention demonstration projects have emphasized organizations with the capability of reaching large numbers of people through local chapters. NIAAA-funded projects (with the Boys' Clubs of America, the U.S. Jaycees, the Education Commission for the States, the YMCA, the National Council on Alcoholism, and the National Congress of Parents and Teachers) have worked to raise awareness and to disseminate information about alcoholism and alcohol problems to wide audiences.

Some local- and State-level voluntary organizations have developed unique projects. The Partners Program in Denver uses volunteers called senior partners to work with youth (junior partners) who have been referred by courts and schools for treatment. Individual junior partners are matched and assigned to individual volunteer senior partners following a screening and training program for the senior partners and an evaluation of the junior partners' needs. The project has demonstrated an approximate 25 percent reduction in crime and truancy recidivism rates for the youth engaged in the program. In addition to evaluating its training and education, the project is worth following for its effectiveness in reducing alcohol-related problems specifically. (This is being done along with evaluations of the alcohol problem prevention component; no outcome information is available for the still-operating project.) The Utah Alcoholism Foundation's "Cottage Program" in Salt Lake City had substantial success using trained volunteers to go door to door for purposes of holding neighborhood meetings to raise awareness and do secondary prevention work in one year. The FAS campaign by the California Women's Commission on Alcoholism and the Wisconsin Association on Alcohol and Other Drug Abuse programs make widespread use of volunteers to cover the large areas of Los Angeles County and the State of Wisconsin.

Local-level alcohol demonstration prevention projects also have had some success in obtaining volunteer services of groups and other organizations, though the prevention project itself may not be conducted by a volunteer organization. Several NIAAA-funded prevention demonstration projects receive donated time and effort from individuals sitting on advisory groups and from other agencies and voluntary organizations.

While volunteer effort and donated time are important elements in the development of community services generally, the tradition of organizing in the United States draws strong local representation on both sides of alcohol issues when they appear to be matters of community concern. For the most part, it appears that the public at large is not inclined to organize local or mass movements around alcohol issues, despite the efforts of particular prevention projects (Room 1977*a*). Alcohol outlets and alcohol availability generally are perceived as sources of only such alcohol-related problems as noise and congestion (Wittman 1980), litter (Wallack 1979), and occasionally objectionable behavior. Availability is not typically perceived by the public as instrumental in creating alcohol problems, except in some minority communities (where outlet densities are high, problem behaviors are more frequent, and ABC or police enforcement is less intense), and in areas where conflicts occur between opposing general population groups (Wittman 1980).

With the general public's current view of alcohol's place in society, primary alcohol prevention projects at the local level aimed at general population groups (not just dependent and at-risk groups) seem likely to face obstacles and opposition in attracting local support and voluntary effort. Two currently operating projects funded by NIAAA (University of Denver; University of Texas) are exploring the prospects of organizing at the local level, so far with meager results. The long tradition of volunteerism for alcoholism and early intervention has not moved into the area of local organizing and community movements for primary prevention projects. Volunteer effort and local organizing remain a challenge for the primary prevention demonstration project aimed at the communitywide population.

Replication of Alcohol Prevention Demonstration Projects.

The rationale for sponsorship of prevention demonstration projects includes replication and dissemination of the project to other sites and populations. The NIAAA Prevention Division is currently at the endpoint of a 3-year, eight-project trial program to explore issues in replication of the original ESD, CASPAR, and University of Massachusetts projects. The replication projects are funded through NIAAA grants of $50,000, with additional funding from States and local replication sites, and involve the State Alcoholism Authorities. NIAAA has also provided a training contractor (Urban and Rural Systems

Associates of San Francisco) which started in early 1979 to assist the projects with program planning, to ascertain needs for assistance from the original projects, and to help in evaluation.

The main objective of these replication projects is the use of basic project concepts and designs at other sites. This illuminated the need for accurate step-by-step documentation, which, if not available in project records, could be obtained from initial project staff. The tasks of organizing staff, setting priorities, and working with other agencies presented the biggest challenge to implementation. Variations in site conditions placed strains on project designs that only creative planning could alleviate. Accompanying such planning deviations were moderate shifts in emphasis of basic themes and activities (Wittman in press). The Illinois and Michigan sites for the University of Massachusetts project replication have used the project resources to strengthen enforcement of campus regulations for student behavior and to encourage treatment activities more than has the original project. Both University of Massachusetts replication projects have been complicated by the recent raising of the minimum purchase age from 18 and 19 to 21, inserting enforcement agendas into responsible use orientations.

Evaluation of the projects will be accomplished through development of evaluation handbooks by original project staff (Mauss and Hopkins 1979; White and Biron 1979) that assist the replication site in collecting and analyzing data in a standardized format. While results are not yet available, indications exist that the data to be generated will have lasting implications for future replication projects.

The discussion of alcohol problem demonstration prevention projects shows the effects of maturation on early program efforts. More recent NIAAA-funded prevention projects are conceptually tighter, more skeptical, and careful in statements of objectives and intentions, more modest in whom they mean to reach and what they mean to do with people, and more deliberate in how they plan to go about it. They are oriented more toward problem solving than toward informing the public about alcohol problems, viewing information as a means rather than an end in itself. They are more curious about what they are doing and are more careful to devise means for finding out. They are more likely to be conducted by public health agencies, university and research-related organizations, rather than by schools, voluntary organizations, and independent service-oriented organizations. They are also beginning to go beyond a focus on the individual to look at other subjects—changes in minimum purchase ages, mathematical models, drinking practices and problems in communities, work with institutional management and social milieu—while still, for the most part, retaining a primary interest in the effects on the individual. Where the projects focus on the individual directly they are likely to do so with multiple and specialized techniques (Wittman in press).

It is hoped that as the prevention demonstration projects develop further, so will the power, conclusiveness, and usefulness of the evaluation. One area in which increasing attention will be needed is that of the projects' effects on the environment and the relationship of these changes to changes in individuals. Alcohol problem prevention projects to date focus rather singlemindedly on individual effects, the problems of which are discussed above in the section on mass media campaigns. One commentator suggests that the impact of prevention projects may actually be better understood in terms of effects on the environment, which in turn have effects on individuals, perhaps even individuals who come after rather than those exposed to the initial projects (Wittman in press). To the extent that alcohol use and abuse are social phenomena, the successful project might be one which alters the regulatory, social, and physical environment, which in turn provides a new set of guides for drinking practices and consequences at individual levels. This is an area as yet unexplored, except peripherally (e.g., the University of Pittsburgh project's interest in "system effects"), yet it is one increasingly called to attention by current alcohol problem research, and is one which logically calls for exploration according to the public health model (Wittman in press).

While the prevention demonstration project utilizing the public health model is evolving as a key tool for exploring alcohol knowledge in ways that can lead to improved prevention services, the ambitious expectation of the earlier prevention demonstration projects appears to be tempered by experience. Immediate reduction of widespread alcohol problems seems an unrealistic goal. Rather, a slow, steady pursuit of well-grounded, well-evaluated goals has recently received strong emphasis within ADAMHA (Klerman 1980). The effort of the public market place and the role of public interest remain to be cultivated and measured in the prevention of alcohol-related problems cited in demonstration projects (Wittman in press).

The Role of Alcohol Beverage Control Boards

Alcohol beverage control agencies are those agencies primarily responsible for setting standards regarding the quality, availability, and price of alcoholic beverages. At the Federal level the leading agency is the U.S. Bureau of Alcohol, Tobacco, and Firearms, which sets standards for quality and content in alcoholic beverages and establishes and collects taxes on the production of alcoholic beverages. At the State level are departments of alcohol beverage control (ABCs) or liquor control boards. While the 21st Amendment repealing prohibition gave powers to the States to regulate alcoholic beverages, including powers to control production, distribution, marketing, and taxation, Federal power in this area is extensive; still, the State ABCs have the major potential for prevention impact (Room and Mosher 1979).

In recent years, the NIAAA has supported several research studies on the role of alcohol beverage control boards. "Alcoholism Prevention in Small Rural Communities," sponsored by the University of Denver, is exploring alcohol-problem prevention measures in mining communities in western Colorado and Wyoming. Beginning with an analysis of agency data on alcohol problems, the project has expanded to interviews and field observations to determine alcohol use patterns and consequences in six small communities.

Another NIAAA-funded project is investigating the effect of returning the minimum purchasing age from 18 to 21 in Massachusetts, using surveys of youth 16-19 years old, crash statistics, and interviews with law enforcement officers. The project, sponsored by Boston University, will compare results with parallel data collected from New York.

A third project is a study of the impact of recent changes in alcohol availability on university students following a change in State law removing restrictions on off-premises sales near two university campuses. Analysis on this project, to be conducted by the University of California, will determine the relationships between availability, drinking practices, drinking problems, and regulatory activity. Surveys of student drinking and associated problems were conducted at the time of the change in law and will be repeated 2 and 3 years after. Changes in consumption and drinking practices will be analyzed in light of changes in amounts of alcohol for sale and changes in the patterns of outlet distribution. Alcohol beverage control agency officials, university administrators, and community groups will be interviewed to obtain their perceptions of student alcohol use and related problems. Changes in regulatory activity will be related to changes in availability. In turn, changes in availability will be related to changes in student drinking behavior. Perceived changes on the part of community groups and officials concerning availability will be related to their perceptions of changes in student drinking behavior.

An example of a demonstration project working to improve the prevention-sensitive operations of a State alcohol control agency is found in a program sponsored by the California Alcoholic Beverage Control Department. Mosher and Wallack (1979*b*) reported on a training program for bartenders and other servers in drinking establishments often identified as the point of origin for a trip that ended in an arrest for drunk driving. The training program includes positive instruction in recognizing incipient inebriation, advice on how to cut off customers without antagonizing them, and steps that can be taken to use the drinking environment to promote moderation in drinking. Owner and bartender demand for training remains high, even though threat of ABC action against the licensee has been removed with repeal of the State's Dram Shop law. The program has met with a positive reception by bartenders, bar owners, and the press.

Relationships Among Public Agencies

The effectiveness of the national prevention effort can be increased greatly through interagency cooperation. Numerous public agencies have the potential to make an impact on alcohol-related problems in a number of different areas. Increased coordination of effort is necessary.

Even among alcohol-specific agencies, increased cooperation seems in order. For example, although the public health mandate is the most frequently cited public goal of the ABC systems found in State statutes (Joint Committee of the States to Study Alcoholic Beverage Control Laws 1973), there is little or no contact between alcohol beverage control boards and alcoholism prevention or treatment programs, departments of public safety, and highway safety agencies. Few data are collected for use by public health authorities, highway safety experts, and concerned citizens or consumer groups to monitor the effectiveness of these agencies. In the course of the nearly 50 years since repeal of prohibition, State control laws have become so varied and complex that comprehension of existing regulations is difficult (Room and Mosher 1979).

There is a need for greater visibility of the functions and impact of beverage control boards within local and State communities. Officials responsible for public health and safety need greater coordination and communication with ABC systems. Local officials need information about prevailing trends in price, locations, and marketing practices in order to evaluate and assess alcohol-related decisions facing communities. Citizens also need this information in order to respond intelligently to proposed changes in zoning regulations and licensing and tax policies.

Although Federal, State, and local agencies are sources of information and authority through which prevention initiatives can be developed, the means for working with the agencies to develop prevention initiatives will require further study. Mosher and Mottl (1980) suggested that many agencies do not perceive the prevention of alcohol-related problems as an activity of high priority. This suggests that prevention specialists wishing to enlist the cooperation of other agencies must seek to open channels of communication, provide information and technical assistance to interested agencies, and encourage joint pilot or demonstration projects as vehicles for increasing interagency cooperation.

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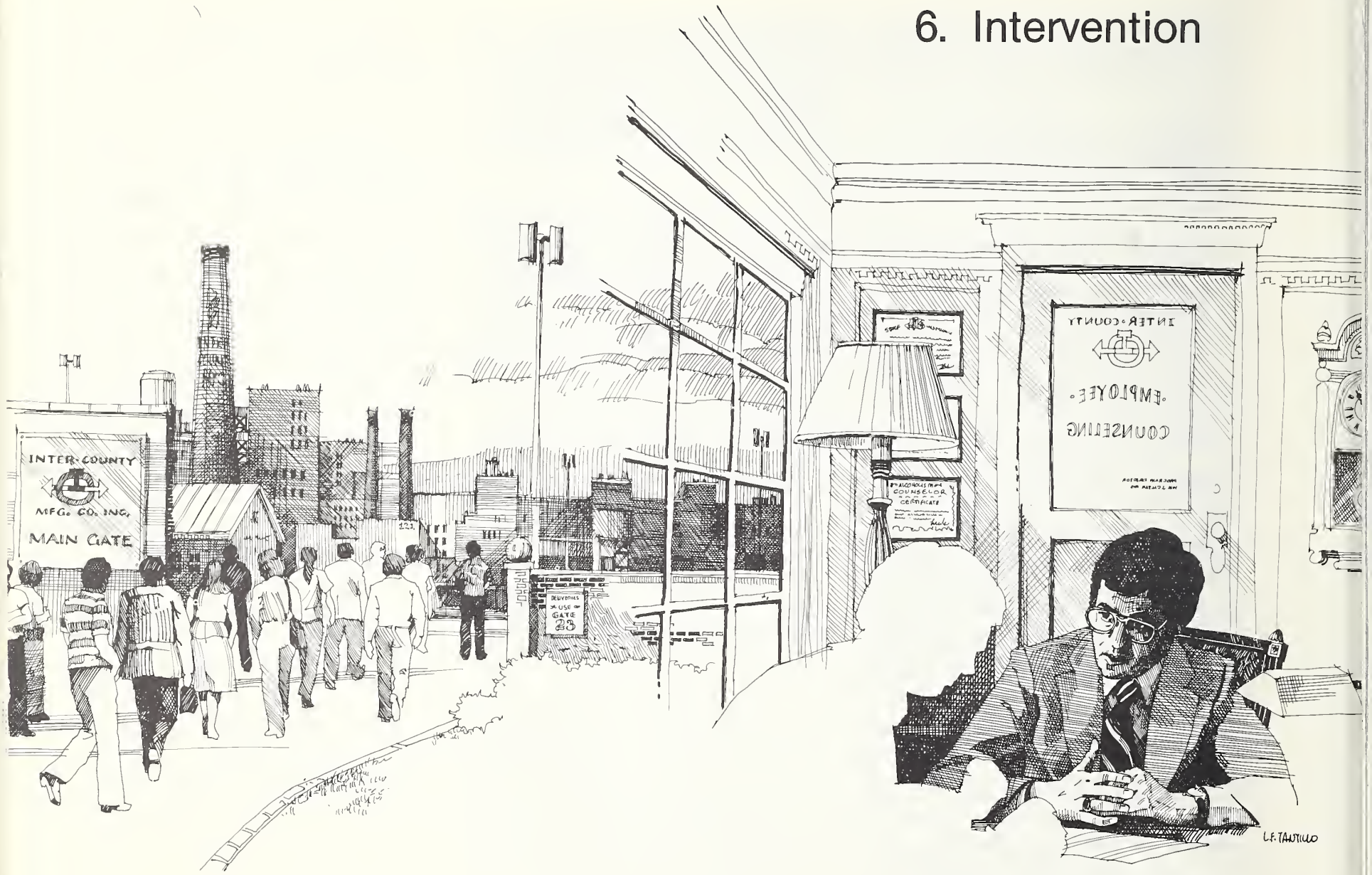
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6. Intervention



The concept of intervention as a response to alcohol-related problems is both complex and elusive. Because it was not addressed per se in the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978), this chapter will attempt to define and explain intervention; place it in the context of the other, more established responses to the problem of alcohol abuse—prevention and treatment; and discuss its application to American society. The chapter will also review the activities, issues, and problems in three areas where the concept of intervention has been more fully developed and implemented: occupational alcoholism programing, programs for children of alcoholics, and programs for drinking drivers.

Defining Intervention

The alcoholism field recognizes three levels of response to alcohol-related problems: primary, secondary, and tertiary levels. The primary level is prevention; its objective is to educate and protect the alcohol consumer so that alcohol-related problems can be avoided. (See chapter 5 on Prevention.) The secondary level is intervention; its aim is to identify alcohol consumers who are at higher than average risk of developing problems and to assist them in obtaining early treatment or in modifying their behavior to eliminate or minimize the risk. Central to intervention is the belief that the processes leading to chronic alcohol abuse can be interrupted and reversed once the symptoms and contributing factors are recognized and understood. The tertiary level of response to alcohol-related problems is treatment; its goal is to modify the drinking behavior of problem drinkers. (See chapter 7 on Treatment and Rehabilitation.)

Intervention lies between prevention and treatment on the response continuum. It can be construed as any response to alcohol problems that is not primary prevention or alcoholism treatment. Often interpretation and emphasis determine what is and what is not intervention. Intervention is analogous to prevention when it involves activities that help to reduce the likelihood of problems occurring due to acute intoxication. Intervention also relates to treatment because of its role in identifying those who may be in need of treatment for alcohol problems; intervention, however, occurs early enough to maximize the potential for correction of alcohol-related problems.

For example, school alcohol education programs are primary prevention efforts when they attempt to educate a segment of the population about alcohol consumption. However, these programs can be viewed as intervention efforts to the extent that they are directed at children who, because of alcoholic parents or for other reasons, are at higher risk of developing alcohol-related problems. If these programs involve identifying and assisting children who already have developed such problems, then they relate to the tertiary response level—treatment.

Other examples of the overlap of intervention with prevention and treatment are the programs dealing with alcohol consumption and driving. There are many primary prevention efforts whose aim is to educate the public about the consequences of mixing alcohol and driving. Those programs directed at persons arrested for driving while intoxicated (DWIs) are most correctly labeled intervention efforts. However, those DWI offenders who are found to have a chronic drinking problem are referred for more formalized alcoholism

treatment. Because of this intricate and somewhat ambiguous relationship, intervention strategies can have important ramifications for both the prevention and the treatment ends of the response continuum.

Intervention's ambiguous, undifferentiated status makes systematic, scientific evaluation difficult. Very little is known about how intervention works with most targeted groups. One possible exception is the area of occupational programing, which will be discussed below. To date, however, the tools and techniques for appropriate outcome assessment in most intervention contexts have not been developed. Their development is essential to the broad, systematic study of intervention. For now, tentative evaluations are often based on "soft" data, anecdotal accounts, and impressions.

Applying the Intervention Concept

Other chapters of this report provide data on the patterns of alcohol consumption in American society and of the major health and social problems associated with these patterns. Cultural norms not only condone and often encourage alcohol consumption, but also encourage excessive consumption in many situations (see chapters 1 and 2).

Societal attitudes have been the most formidable barrier to successful intervention. This is unfortunate because early identification and treatment often mean a much better prognosis. Other barriers to intervention include client denial and rationalization; lack of motivation to question one's drinking behavior and seek help during the early stages of problem drinking; lack of guidelines by which a person can evaluate his or her drinking habits; attitudes of family, friends, and neighbors; inadequacies in the referral-treatment network; negative attitudes and lack of expertise of helping professionals (Cohen in press).

A good sign for increased early intervention is the recent shift in attitudes about admitting to and seeking help for alcohol problems. The publicity given to prominent persons who have been willing to share their experiences with the public has helped to counteract the strong influences mentioned above and to create a positive environment for implementing intervention efforts. These efforts can be of a formalized nature such as occupational programing, or they can reflect a less formal day-to-day approach to individual drinking problems. Numerous settings have the potential to contribute to intervention efforts. And many people have the potential to serve as interveners, that is, to be in a position to identify a drinking problem during its initial phases: interveners can be family members, friends, physicians, social workers, law enforcement personnel, ministers, teachers, servers of alcoholic beverages, outreach workers such as recovered alcoholics, etc. Through increased awareness and, in some cases, training, interveners can play a vital role in guiding incipient problem drinkers into appropriate treatment.

In recent years early intervention has focused on certain high-risk groups with predisposing conditions: persons with familial or genetic factors that place them at risk for alcoholism; those under stress; those in occupations which expose them to alcoholic beverages; those who drive while intoxicated; persons with poor job performance; those with certain medical or psychiatric disorders; and those with alcohol-related diseases or signs (Cohen in press). This chapter now turns to three of the high-risk groups that have been the object of some well-developed and extensive intervention efforts: workers, children of alcoholics, and drinking drivers. Activities since the last report are reviewed and major trends, issues, and problems are highlighted.

Occupational Alcoholism Programing

The most well developed and extensively implemented intervention approach—occupational programing—was discussed in both the *Second* and *Third Special Reports on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1974, 1978). This section will

describe occupational programing, review its history, discuss current activities in both the private and public sectors, and examine major trends and issues that have developed since the last report.

Occupational Alcoholism Programing: Underlying Assumptions, Components, and Objectives

Occupational alcoholism programing has developed in response to the need of occupational groups and industries to identify problem drinking employees through observation of poor job performance and to provide intervention techniques for referral and treatment to ameliorate these performance problems. Its major goals are to enable the problem-drinking employee to return to health and to regain an adequate job performance level.

Occupational alcoholism programing is based on four assumptions: (1) the most clear-cut mechanism for identifying problems related to alcohol use is the supervisor's awareness of impaired performance; (2) alcoholism should be regarded as a medical problem in the workplace; (3) regular disciplinary procedures for poor performance should be suspended while an employee conscientiously seeks assistance for the problem; (4) returning to adequate job performance is a major criterion for judging successful outcome (U.S. Department of Health, Education, and Welfare 1978).

Occupational alcoholism programs vary a great deal because of the voluntary nature of implementation in the private sector and the wide diversity of organizations and jobs. However, most programs include the following components: a written policy and procedures statement; explicit labor-management cooperation in program development and operation; designation of key organizational personnel to channel employees for appropriate diagnostic judgment; orientation of supervisors and shop stewards about their responsibilities under the policy; diffusion of information about the program to the entire work force; health insurance coverage for the treatment of alcoholism and related disorders; and assurance of total confidentiality for those identified and referred through the program (U.S. Department of Health, Education, and Welfare 1978).

Occupational alcoholism programs can also be described in terms of approach, function, and location. *Approach* refers to whether the program is intended to identify alcohol problems only or whether the program is part of an employee assistance program. Employee assistance programs have a broader focus; they may deal with economic, social, and psychological problems, as well as alcohol-related problems. There is some difference of opinion concerning the inclusion of occupational alcoholism programs within employee assistance programs and these differences will be discussed later. *Function* refers to whether the intervention activities involve (a) consultation-outreach only; (b) assessment and referral; (c) diagnosis and general referral; or (d) diagnostic treatment (Gualtieri et al. 1978). *Location* refers to whether the program is administered within the organization itself, through an occupational program consultant, through a consortium, or through a treatment center-outreach arrangement (Godwin 1977; Spaeth 1977).

History of Occupational Programing

Formal public concern for workers' health can be traced to the early 1900s, with passage of the Federal Employees Liability Act and State workmen's compensation legislation (Hanlon and Pickett 1979). Formal programs for alcoholism as part of occupational health activities began in the 1940s; the founding of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) in 1971 expanded these efforts into a large-scale, systematic national campaign.

Two significant activities of NIAAA to promote occupational programing were (1) grants to set up a network of occupational programing consultants to help develop programs at State and local levels and (2) grants to fund model and demonstration programs that would act as catalysts for other program development and provide information needed for planning, research, policy formation, and program development (Godwin 1977, 1979; Montague 1979*a,b*; Trice 1980).

Occupational programing has grown rapidly in the last decade through the concerted efforts of public and private agencies, alcoholism professionals, and labor and management. The following breakdown shows estimates for numbers of occupational programs from 1940 to the present (Akins 1979; U.S. Department of Health, Education, and Welfare 1978):

Year	No. of Programs
1940-45	4-6
1950	50
1973	500
1977	2,400
1979-80	4,400

Of course, relative to the total number of settings where programs could be implemented, 4,400 is a very small number. What is relevant is the increasing rate of growth in recent years, which reflects the success of public and private efforts and possibly a more receptive attitude toward problem drinking on the part of society.

The target population of occupational programing efforts is the country's employed work force—a large and diverse population. Of the 107 million workers, 2.1 million are in the armed forces. Other public employees, excluding the military, equal 15 percent of the work force: 9.2 million at the local level, 3.5 million at the State level, and 2.9 million at the Federal level. It has also been estimated that the total work force is 58 percent male and 88 percent white (Predicasts, Inc. 1979; U.S. Department of Commerce 1979, 1980).

Private Sector Activity

In 1972, 1974, 1976, and 1979, program development in the private sector was evaluated mainly through an Executive Caravan survey conducted by the Opinion Research Corporation (1979). Samples were drawn using Fortune 500 manufacturing companies and 250 banking, insurance, utility, transportation, and financial organizations. Executives were interviewed about their organization's occupational programing activities, and its attitudes toward such programs.

The change in the percentage of sample organizations reporting the presence of a program is as follows (Roman in press):

Year	Have Program (percent)	Don't Have Program (percent)	Don't Know (percent)
1972	25.2	61.8	13.0
1974	34.1	52.8	13.1
1976	50.4	39.4	10.2
1979	56.7	35.7	7.6

The proportion of sample companies with programs has increased steadily since 1972. In fact, the proportion with programs doubled between 1972 and 1976. Of interest is the fact that the rate of increase slowed considerably between 1976 and 1979. Whereas there was a 9 percentage point increase between 1972 and 1974 and a 16 percentage point increase between 1974 and 1976, the increase between 1976 and 1979 was only 6.3 percentage points. Several reasons have been offered for this slowing of the rate of increase: (a) a shift in emphasis from large to smaller organizations and to a consortium approach; (b) more concern for program quality in the larger organizations; (c) change to a more stringent definition of what a "program" is; and (d) reaching of a saturation point in large organizations.

Some of the more significant findings from the 1979 Executive Caravan survey are the following:

–There was a significant increase over 1976 in the number of executives perceiving strong management support for programs; the percentage of executives reporting lack of management support fell to less than 0.5 percent.

–Though most programs emphasize supervisory referral, an increasing number of self-referrals are being made.

–There continues to be a move away from placing programs in personnel departments and toward placing them in medical settings, though personnel areas remain the predominant program location.

–There is increasing use of a consortium approach, especially among small businesses.

–Corporate social responsibility remains the single most important reason for program adoption.

–The majority of programs now have at least one full-time staff member, a substantial change from 1976.

–Supervisory training and health insurance coverage for outpatient alcoholism treatment increased substantially over 1976.

–As in 1976, there remains a lack of publicity and information diffusion about company programs. Without these, programs may not, in reality, be operational.

–Essential structural content of programs in large organizations has improved markedly since 1976, due to the substantial commitment of funds and effort by the organizations, which see these programs as serious investments.

–There was a dramatic increase in the extent to which unions were perceived as strongly supporting programs, from 40 percent in 1976 to 70 percent in 1979.

–As in 1976, the vast majority of survey respondents did not see alcohol abuse as a problem in their organizations.

–Those employees most often referred to programs for help were at the rank and file, middle management, and staff employee levels; those least often referred were at the clerical and top management levels.

–A strong association was found between the percentage of blue-collar workers in the organizations and the presence of a program: 46 percent of organizations without blue-collar workers had programs versus 71 percent of organizations whose work force consisted of three-fourths blue-collar workers.

–Organizations with relatively few blue-collar workers seem to be changing with regard to receptivity to instituting programs.

–Many executives in companies without programs do not believe that a program would be cost effective or that the prevalence of problems in their work force warrants one. These executives tend to be significantly more satisfied with existing procedures for handling problem-drinking employees, though only 13 percent are completely satisfied with existing procedures.

–Occupational programing consultants are moving away from the "salesmanship" strategy based on arguments of cost benefits and prevalence rates to promote programs. They are more often emphasizing indigenous procedures and efforts to build an appropriate program.

Public Sector Activities

Very few public sector organizations had occupational programs prior to 1972. Occupational programing in the public sector was expanded through the development of State occupational programing consultants and through a congressional mandate that the Federal Government establish an employee alcoholism program for its civilian employees. Subsequent legislation required the provision of similar services for military personnel (U.S. Department of Health, Education, and Welfare 1978). In 1980 Congress authorized the extension of program services to the families of Federal civilian employees.

Though the Federal emphasis on occupational programing began in the early 1970s, diffusion of policy to implement agency programs has been slow (Comptroller General 1977). A survey of civilian Federal installations in the Northeast found many sources of resistance to policy implementation. A subsequent study by the General Accounting Office concurred that "while progress toward implementation has been made within the Federal Government, more needs to be done" (U.S. Department of Health, Education, and Welfare 1978). Federal Government guidelines for expanding employee alcoholism programs into programs that offer a broad range of counseling services have only recently been developed and circulated (*Labor-Management Alcohol Journal* 1979).

However, it should be noted that while fewer than one-half of all Federal installations report having alcoholism counseling services, those installations with programs employ over 80 percent of all Federal personnel, and approximately 100,000 employees have been referred to, or sought, treatment since such services were first offered in 1972 (Phillips 1979).

On the State and local levels, 39 States indicate that they have programs of some kind for their own State government employees, and for 38 responding States, 638 programs were reported as existing within local governments (Akins 1979). Twenty-five States have passed laws regulating insurance coverage for alcoholism treatment; of these, 14 mandate that all health insurance policies vendored in the State cover alcoholism treatment; 15 States require that alcoholism benefits at least be offered to policyholders (Cooper 1979).

Problems in the public sector that have been recognized as needing attention from the Federal Government include: (a) the lack of knowledge about cost effectiveness of programs; (b) inadequate knowledge about program outreach; (c) the lack of criteria to measure the degree of implementation; and (d) a lack of understanding of the dynamics between employees and supervisors.

Major Trends and Issues in Occupational Programing

Professional Training and Development

As noted in the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978), occupational specialists are not yet recognized as a substantial occupational or professional group. The main reason for this is the lack of training opportunities and credentialing and the lack of an ongoing set of channels to develop and enhance a professional reputation.

To help bring about further professional development, the NIAAA has aided in the formation of a national association of occupational programing specialists and has taken other actions to facilitate the growth and acceptance of the field.

Founded in 1971, the Association of Labor and Management Administrators and Consultants on Alcoholism (ALMACA) now has 2,202 members, with 5 regional chapters, 28 local chapters, and 11 "forming" chapters. Other professional organizations are the Occupational Program Consultants Association and the International Occupational Program Association.

In 1972, NIAAA awarded grants to establish occupational programing consultants in the States and to develop a 3-week training institute and followup sessions focused on intensive education in alcoholism and organizational relations (U.S. Department of Health, Education, and Welfare 1974). Training activities have also begun in various schools of social work and alcohol studies in recent years, e.g., Boston College, the University of San Francisco, Columbia University, Hunter College, and the University of Utah (Farr, Gualtieri, and Williams 1978*b*; U.S. Department of Health, Education, and Welfare 1978).

A detailed examination of occupational programing tasks, skills, and knowledge requirements has been made as well as the identification of training objectives (Farr, Gualtieri, and Williams 1978*a*). And formal attempts have been made to identify collectively the scope of training deficiencies and their possible resolution (Farr, Gualtieri, and Leslie 1978; Farr, Gualtieri, and Williams 1978*b*).

The National Center for Alcohol Education has committed itself to the establishment of training programs and plans to undertake the development of prototype curriculums in 1981-83 (National Institute on Alcohol Abuse and Alcoholism 1980*b*).

Though some short- and long-term training efforts do exist, there continues to be a need for a comprehensive and systematic approach to training professionals in occupational programing, as well as a need for professional level reference and source materials.

Alcohol-Only Programs and Employee Assistance Programs

One consequence of the emergence of the Federal Government as a sponsor of occupational programing has been a shift in the emphasis of the preferred

approach from alcohol-only programs to employee assistance programs. Employee assistance programs reflect a "broad brush" approach; they focus on a variety of employee problems—economic, social, and psychological, as well as alcoholism (Schramm and Archer in press). This shift has raised a number of questions concerning such things as the difficulty in evaluating the impact of these programs on alcohol problems, the shift in responsibility for employee confrontation from the supervisor to the counselor, vagueness of goals, and inability to determine which components are cost effective (Brant 1979; Dunkin 1979; U.S. Department of Health, Education, and Welfare 1978). Given the strong government commitment to the development and promotion of employee assistance programs, ways will have to be found to maintain the integrity of the alcohol programing component within the broader employee assistance program approach.

Research and Evaluation

As noted in the *Third Special Report on Alcohol and Health*, the research on which work in the occupational programing field is based "is incomplete in nearly all respects"; systematic research and recruitment of researchers are essential (U.S. Department of Health, Education, and Welfare 1978). A meeting of experts in the field, sponsored by NIAAA (1980*a*), focused on identifying researchable issues in occupational programing. The issues raised were:

–Epidemiology of alcohol abuse and alcoholism within occupations and within organizations;

–Risk factors for alcoholism associated with occupations;

–Barriers to the development of occupational programing;

–Design and integration of intervention mechanisms;

–Interorganizational relationships;

–Dynamics of the identification and referral process in work organizations;

–Psychodynamics of the return and followup process in the work organization;

–Evaluation of occupational programing's efficiency and effectiveness.

The success rates for occupational programing are quite high compared with those of nonwork settings (Mandell 1971; Von Wiegand 1972). It has been suggested that the effectiveness of occupational programs is due to earlier intervention with younger, less impaired persons who have shorter treatment histories and greater social and economic stability (Moberg 1974; National Institute on Alcohol Abuse and Alcoholism 1977).

Controlled studies involving comparisons of alcoholic employees referred to occupational programs with employees who do not participate in such programs are needed. Studies of this type would help clarify the influence of forces such as selection bias and intervening factors on programing success rates. Also needed are studies of the long-term impact of rehabilitation efforts on the work careers of referred workers, to help researchers understand the nature and degree of relapse among program participants (Schramm and Archer in press).

Intervention Strategies and Changing Conceptions of Alcohol Problems

New research seems to be emphasizing stress and the availability of alcohol as factors related to problem development. Studies are now being done that provide support for the differential distribution of various alcohol-related problems by occupation and industry. (See, for example, Cahalan and Cisin 1975; Mannello and Seaman 1979 on railroad workers; Polich and Orvis 1979 on the military; and Plant 1978, 1979.) These types of studies will be useful in developing specific intervention procedures for various occupational categories.

To date, research along these lines has indicated (a) that alcoholism tends to be identified more often among workers in lower status jobs; (b) that, if varieties of drinking problems in addition to clinical alcoholism are considered, those with drinking problems are in lower status positions but are younger than those in the alcoholic category; and (c) that, when the spectrum of alcohol use is analyzed within the context of the occupational

structure, both the research question and the assumptions underlying it change. The source of some types of alcohol problems may not be solely in the individual but may also be in the social context (Fillmore and Caetano 1980).

Future research tuned into the conditions of the workplace could make a contribution if it (a) examines variables in the social structure that are related to a variety of drinking behaviors; (b) identifies persons in the social structure as to the spectrum of their drinking; and (c) relates the consequences of the drinking to the position of these persons within specific structures (Fillmore and Caetano 1980).

Children of Alcoholics

This section focuses on children of alcoholics and reviews recent developments, issues, and problems associated with intervention efforts directed at this population.

Research has recently begun to document the negative effects of parental alcoholism on children. They include the greater risk of experiencing problems of alcohol and drug abuse or alcoholism (DiCicco 1979; Vaillant 1979; Whitfield 1979); psychological and emotional problems (Richards 1979; Whitfield 1979); physical health problems (Behling 1979); problems in completing schooling; and choosing an alcoholic spouse. A recent study by Richards (1979) indicates the severe impact of maternal alcoholism, especially on boys. More such research on the effect of maternal vs. paternal alcoholism would be useful in the development of intervention strategies for children.

Conservative estimates are that children of alcoholics number 12 million; other estimates put the number as high as 25 million. This means that in any given classroom, 4 to 6 children out of every 25 come from alcoholic homes (Deutsch et al. in press). Professionals in this area seem to be in agreement that only 5 percent of these children are receiving help.

It is important to note that the category, children of alcoholics, includes adults. The negative effects of having an alcoholic parent do not cease with the end of childhood. The attitudes, problems, and coping techniques learned as a child to deal with an alcoholic parent are often carried into adulthood, with additional negative consequences.

Goals of Intervention with Children of Alcoholics

As outlined by Deutsch et al. (1980), the goals of early intervention with children under 18 include establishing a warm and caring environment; helping children to acknowledge and express their feelings; helping children to understand the illness of alcoholism and its effect on their family and themselves; promoting friendships and reducing social isolation; generating openness to formal and informal help; improving coping skills and reinforcing new ways of expressing emotions; examining ideas about drinking; providing good role models and the opportunity for the child to demonstrate responsible behavior; and improving the child's self-concept.

Intervention Strategies

Only a handful of programs appear to be working with children of alcoholics in any sizable numbers and for any significant duration of time (Deutsch et al. in press). Most often these programs are embedded in a broader educational program within a school system or are part of a larger community-based program such as an alcoholism treatment or mental health service or a comprehensive multi-service center.

The age range for these programs runs from infancy to young adulthood. Several of the programs are exclusively for adolescents. The level of parental involvement varies across programs, though most programs report at least some.

Characteristics common to the more well developed programs include: an emphasis on group work; a relatively brief duration of formal intervention; clear agreement on the need to train professionals in the problems and needs of children of alcoholics; an increasing demand for services from the community; and a perception of substantial progress among their children, though scientific assessments as to successful outcome have not been conducted.

Children come to the attention of these programs through several channels: they may be the children of patients already in treatment; they may be referred by the police, the courts, or school guidance personnel; they may be referred through AA and Al-Anon groups; and in one program, they are identified by specially trained classroom teachers and peer leaders.

Major Issues and Needs in Intervention with Children of Alcoholics

There are many unanswered legal and ethical questions in this area. These questions are particularly relevant to the issue of appropriate vs. inappropriate intervention in the child-parent relationship. For example, can services be provided to a child without the parent's knowledge or in spite of a parent's objection?

The short-term and long-term effects of intervention need to be assessed. As with other intervention efforts, tools and techniques have not yet been developed so that a systematic, scientific evaluation of these intervention strategies can be done. At present, results are evaluated mainly through subjective impressions.

The participants in a Symposium on Services to Children of Alcoholics, sponsored by NIAAA in September 1979, developed a list of specific recommendations to enhance the development of services to these children. These recommendations included developing a greater commitment to this population among interested organizations and funding sources; encouraging the various professional schools to incorporate training in family alcoholism; providing long-term funding for innovative programs; collaborating with State alcoholism authorities to provide training to those working with these children; raising public awareness of the incidence and severity of family alcoholism; helping to clarify legal and ethical issues; and requiring services for children of patients to be integrated within alcoholism treatment programs (Deutsch et al. in press).

Drinking Drivers

A report from the U.S. Comptroller General (1979) stated that an estimated $100 million was spent in 1976 by Federal, State, and local governments for activities geared toward reducing the amount of drinking driving or the level of risk involved. In addition to these government expenditures, the consequences of drinking driving include enormous human and economic costs. For example, a recent literature review found that between 35 and 64 percent of all fatal crashes and 6 to 25 percent of all nonfatal crashes involved alcohol (Roizen in press).

In 1978, drivers under age 20 were involved in 11,500 crashes with at least one fatality. That year, there were 5.6 million reported traffic accidents caused by young drivers (aged 15–20) (National Safety Council 1980). Traffic accidents are the single greatest cause of death among youths in this country—and in many cases alcohol is involved. In fact, from 40 to 60 percent of all fatal crashes involving a young driver are alcohol related (Douglass in press).

Given the magnitude of the problem and the high costs involved, it would be remiss not to review the most common countermeasures used today in order to assess their value in deterring drinking driving and its consequences. It has been estimated that eliminating drinking driving entirely would prevent up to 24 percent of fatal traffic accidents, 12 percent of injury-producing accidents, and 6 percent of property damage accidents.

Reducing the Amount of Drinking Driving

The most well known countermeasure is exposure reduction, that is, reducing the amount of drinking driving that occurs. The different possible forms of exposure reduction are (a) general deterrence through high risk of arrest, through severity of punishment, and through public information and education efforts (PI&E); (b) recidivism reduction; (c) third-party intervention; (d) changing the minimum drinking age; (e) screening the driving population; and (f) installing detection devices on cars. Not all of these methods are currently in use.

Risk of Arrest.

Increasing the risk of arrest has been shown to reduce the amount of drinking driving, but it is unknown how high that risk must be set and what its implementation will cost. Risk of arrest can be increased through targeting patrols by day, time, and location; by making breath tests for alcohol easier to administer both legally and technically; by simplifying the process for making a DWI arrest; and by providing police with the motivation to make such arrests.

Severity of Punishment.

Increasing the severity of punishment for drinking driving would probably have the opposite effect of that intended. People in the law enforcement and judicial systems may be reluctant to subject DWI offenders to severe punishment. Even if severe penalties were authorized, they might result in fewer arrests, fewer convictions, and more plea bargaining. There might also be an added cost to the taxpayer because of more and lengthier trials and appeals.

Public Information and Education.

There are three types of PI&E efforts: those that try to inform and educate; those that attempt to alter attitudes; and those that attempt to provide information that would make it easier to avoid driving while drunk. The first two types of efforts have not been shown to be effective in changing either attitudes or behavior (Jones and Joscelyn 1978; Organisation for Economic Co-operation and Development 1978).

Recidivism Reduction.

The potential reduction in traffic accidents obtainable through DWI recidivism reduction is sharply limited by the small number of persons with previous DWI arrests among drivers involved in accidents while driving with a positive BAC. Sterling-Smith (1976) reported that, of drivers responsible for fatal accidents in the Boston area during the early 1970s, 4 percent had a previous DWI arrest and 39 percent had a BAC exceeding 0.05 percent at the time of the accident. Thus, it is impossible that more than 10 percent (i.e., 4 percent/39 percent) of "drunk" drivers responsible for fatal crashes had a previous DWI arrest.

Third-Party Intervention.

People can intervene (a) by making it less convenient or acceptable for a person to drink to intoxication; (b) by suggesting that intoxicated persons sober up before driving or take a taxi; (c) by restraining an intoxicated person who insists on driving or by contacting the police. Public information and education campaigns have attempted to increase third-party intervention but with little success.

Drinking Age.

Several studies have shown that where drinking age is lowered from 21 or 20 to 18, the number of accidents involving younger drivers remains constant or increases (Haddon 1979; Organisation for Economic Co-operation and Development 1978; Scotch 1979; Comptroller General 1979). The increase found in these studies ranged from 0 to 26 percent. However, still to be resolved is the rationale for selecting any one of the ages between 18 and 21 as the cutoff point.

Screening.

License screening of the driving population for potential drinking drivers is a measure that has significant political and legal implications. The two main problems with this technique are what to do about the persons identified through the screening process and how to prevent the occurrence of errors that might stigmatize some persons.

Detection Devices.

Problems involved in equipping cars with detection devices include the high cost, probable hostile public reaction, and the possibility that even sophisticated devices could be bypassed or removed. Such devices would be more justifiable for those persons who have been convicted of repeated DWI offenses.

Reducing the Negative Effects of Drunk Driving

Risk reduction is the lowering of the expected cost, in terms of deaths, injuries, and property damage resulting from drunk driving (Reed in press). Generally applied risk reduction techniques would include such things as seatbelts, air bags, speed governors, redesigned road markers, and other environmental changes that would require less attention on the part of the driver.

Specifically applied risk reduction refers to methods directed only at those drivers who have been known to drive while intoxicated, e.g., improvements in the crashworthiness or ease of driving a car.

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7. Treatment and Rehabilitation



Since publication of the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978), progress has continued to be made in the provision of treatment and rehabilitative services to alcoholics and their families. Much of this progress has centered on improvements in the quality of treatment, concern with culturally appropriate treatment for special population groups, interest in earlier treatment intervention, and further refinements in the study of treatment effectiveness.

While there are no startling developments to report with regard to treatment and rehabilitation, increased understanding of a number of important matters has been achieved. Formal research and clinical observation have stimulated reappraisals of treatment methods, goals, and contexts.

Provision of Services

Data on the numbers of persons receiving treatment for alcoholism and problem drinking suggest further increases in recent years. In 1976, an estimated 1.584 million persons received treatment from both private and public sources for alcoholism and problem drinking (U.S. Department of Health, Education, and Welfare 1978). Estimates for 1977 showed an apparent increase to 1.712 million (Vischi et al. 1980).

NIAAA-funded programs provided treatment to 337,000 persons in 1976 and 260,000 persons in 1977. The apparent decrease in persons served by NIAAA-funded programs for 1976-77 was partially accounted for by the transfer of some projects to the Indian Health Service. Data for 1978 indicate that an estimated 268,400 persons were treated in NIAAA-funded programs (Ferguson and Kirk 1979).

The State Alcoholism Profile Information System (SAPIS) has provided estimates for 1979 on the patterns of admissions to alcoholism treatment programs funded entirely or in part by State or Federal agencies (National Institute on Alcohol Abuse and Alcoholism 1980).[1] Of the 1.058 million reported admissions to State or federally assisted programs, 77 percent were male and 15 percent were female. Sex was unreported for 8 percent of the admissions.

With regard to age, the SAPIS data are complicated by a relatively low response rate; approximately one-quarter of the reports did not include age. However, for those admissions in which age was reported, the largest number was from the 21–44 age group (444,976, or 54 percent). Persons aged 45–64 were the second largest group of admissions (285,478, or 35 percent). Persons in the age group 18–20 made up 5 percent of the admissions (38,477), while the over 65 group contributed slightly more than 3 percent (28,628), and the under 18 group slightly less than 3 percent (23,873).

In general, then, while recent data suggest increases in the provision of alcoholism treatment services, approximately 85 percent of the population of alcoholics and problem drinkers are not receiving formal treatment services. Membership in Alcoholics Anonymous (AA) does serve the needs of some of this large group of untreated persons. Approximately 671,000 persons were estimated to have participated in AA in 1977 (Vischi et al. 1980). Considering persons in formal treatment and persons participating in AA, approximately 8 million of the Nation's alcoholics and problem drinkers were not receiving services in 1977. While the use of services seems to be comparable across all ethnic and age subgroups and for both sexes, some differences in utilization of services are apparent in SAPIS data for 1979. If

[1] Data on admissions by States are complicated by several factors: (1) some States report duplicated admissions while others report unduplicated admissions; (2) some States find it difficult to report data for some of the categories requested.

estimated prevalence rates are taken into account, it would appear that women, Spanish-speaking Americans, and youth aged 20 and under receive less services than do other alcoholics and problem drinkers (National Institute on Alcohol Abuse and Alcoholism 1980).

Patterns of Service Provision

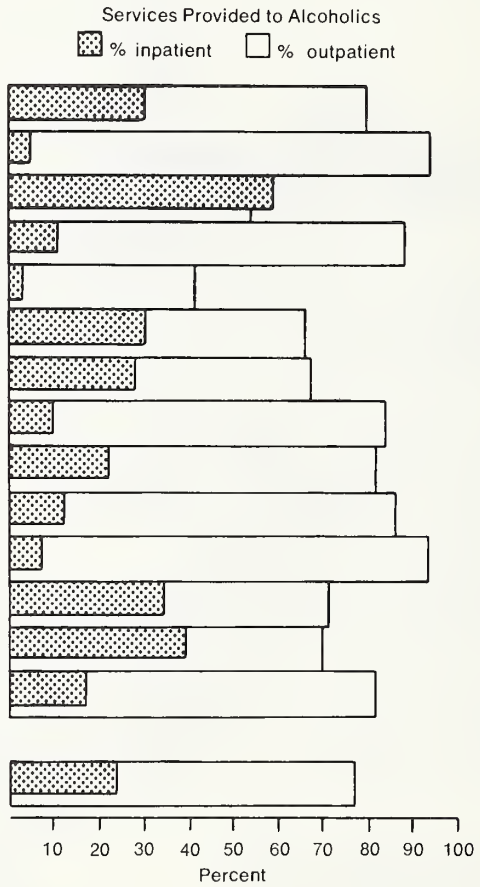
Data for calendar year 1978 (Ferguson and Kirk 1979) provide information on patterns of treatment in NIAAA-funded categorical programs. As can be seen in figure 1, outpatient services are the most frequently used services. Seventy-seven percent of the services received by alcoholics and problem drinkers in NIAAA-funded programs were outpatient services.

A sense of how the alcoholism treatment caseload is distributed in the United States can be gained from an examination of table 2. Changes in the distribution can be noted by comparing data for 1942 and 1975–76.

As can be seen in table 1, the majority of alcoholics are apparently treated in public and other general hospitals (481,000) and federally funded alcoholism programs (308,929). Indian hospitals, community mental health centers, State mental hospitals, and the Veterans Administration also treat appreciable numbers of alcoholics.

FIGURE 1

Distribution of Persons with a Primary Problem of Alcoholism and Other Clients Receiving Services in NIAAA-Funded Programs



SOURCE: Ferguson and Kirk (1979).

TABLE 1

Alcoholism Treatment Caseload in the U.S., 1942 and 1976 (Partial and Approximate Figures)

Treatment Location	1942	1976
State mental hospitals	10,461[a]	106,615[c]
Private mental hospitals	4,754[b]	10,827[c]
Public and other general hospitals	22,147[b]	481,000[c,d]
Special institutions for alcoholics	6,689	
Federally funded alcoholism programs (except CMHCs and drinking driver)		308,929
Veterans Administration hospitals	3,886	95,000
Small numbers for Alcoholics Anonymous, outpatient programs, nonmedical institutions (missions, rehabilitation farms, etc.)		121,300[c]
Community mental health centers		
Drinking driver programs		49,472[c]
Military programs		40,000
Indian hospitals		137,000
Halfway houses		36,000
Alcoholics Anonymous		320,000
TOTAL		
U.S. resident population	133 million	214 million

SOURCE: [a] 1942: Corwin and Cunningham (1944).

[b] 1976: Mental Hospitals: President's Commission on Mental Health, Appendix, Vol. II, 1978, p. 102. All other figures: President's Commission on Mental Health, Appendix, Vol. IV, 1978, p. 2096.

[c] Room (1979).

[d] Apparently does not include 89,057 psychiatric caseloads in general hospital services.

Developments in Studies of Treatment Effectiveness

Baekeland (1977), in his comprehensive review of the English language literature from 1953 to 1974, concluded that recovery rates and improvement rates for alcoholics following treatment were dependent upon a number of factors. For alcoholics of higher socioeconomic status and higher social stability, improvement rates for inpatient treatment ranging from 32.4 percent to 68 percent were apparent in published studies of treatment effectiveness. For alcoholics of lower socioeconomic status and lower social stability (largely skid row alcoholics), improvement rates ranged downward from 18 percent.

These apparently reliable findings for socioeconomic status and social stability underscore the importance of casefinding efforts and early intervention in alcoholism treatment. Treatment interventions with alcoholics in early or middle stages of their disease are far more likely to result in improvement than are interventions aimed at late-stage alcoholics.

The findings for socioeconomic status and social stability also indicate the importance of factors other than formal treatment factors in the recovery from alcoholism. For many alcoholics, particularly those of lower socioeconomic status and lower social stability, treatment may be a necessary but not sufficient condition for recovery from alcoholism. While treatment may be most effective in aiding in the acquisition of new beliefs, attitudes, feelings, and behaviors necessary for recovery, the maintenance of these changes is influenced largely by extratreatment factors. In effect, with particular segments of the alcoholic population, treatment cannot be conducted in isolation from generic social service helping systems. It is unrealistic to expect gains made through intensive treatment to be maintained in the absence of efforts directed toward meeting primary survival needs, increasing social stability, and returning the alcoholic patient to the opportunity structure of the society.

That alcoholism treatment is closely associated with initial changes in drinking behavior is evident in data concerning changes in alcohol consumption, impairment, and social function from intake to followup in NIAAA-funded programs. As the data in table 2 indicate, substantial changes are apparent in patients' behavior following treatment regardless of the type of program in which they are treated.

TABLE 2
Changes in Alcohol Consumption, Impairment, and Social Function in NIAAA-Funded Programs, 1978[a]

Program Type[b]	Number	Percent Abstaining		Average Ethanol Consumed Per Day in Ounces	
		Intake	Followup	Intake	Followup
Alcoholism treatment center	2,183	12	47	4.0	1.4
Problem-drinking driver	1,257	8	46	2.2	
Public inebriate	441	20	64	6.6	1.9
Poverty	2,634	18	55	4.5	1.6
Occupational	137	13	67	5.7	1.1
Cross-population	1,507	18	56	4.8	1.7
American Indian/Alaskan Native	570	16	42	5.6	2.7
Criminal justice	238	32	76	4.4	0.6
Women	295	31	73	3.7	0.5
Spanish	574	13	51	1.2	0.5
Black	258	13	42	6.9	2.0

Average Number of Drinking Days		Impairment Index[c]		Average Number of Days Worked		Employment Rate	
Intake	Followup	Intake	Followup	Intake	Followup	Intake	Followup
13	6	12.1	8.1	13	14	70	80
0.6	12	5	7.1	3.8	16	17	83
13	4	18.8	16.3	5	8	21	43
13	6	15.4	11.4	11	13	58	74
17	4	14.8	7.8	18	20	89	91
13	6	16.0	12.0	11	13	65	76
10	6	14.1	11.9	6	8	33	51
11	2	14.5	8.4	7	8	34	41
11	3	17.9	12.6	7	10	47	68
8	4	4.7	3.5	18	18	82	87
17	8	13.7	8.9	8	11	43	62

[a] Data in this table are drawn from behavior 30 days prior to intake and at 6-month followup.

[b] Sample size varies slightly for each program type and for each variable reported on. Actual sample size is available in Ferguson and Kirk (1979).

[c] The Impairment Index is a multi-item scale which is completed at intake and followup. The Index captures information about the occurrence of signs of behavioral impairment or physical dependence during the preceding 30 days. The higher the score, the greater is the alcohol-related impairment.

SOURCE: Ferguson and Kirk (1979).

While followup studies of treated alcoholics show substantial gains, they also show some decay of these gains as followup is carried out over longer periods of time. For example, in a recent study of the course of alcoholism 4 years after treatment, substantial combined abstention and improvement rates in excess of 60 percent of those located at followup were noted at 18 months after treatment (Armor et al. 1976). By 4 years, however, as treatment effects decayed over time and as extratreatment factors became more and more salient, reductions in combined abstention and improvement rates were observed (Polich et al. 1980).

The findings for social stability and socioeconomic class are important for still other reasons. For socially unstable alcoholics of lower socioeconomic status, greater attention must be given to important extratreatment support systems. The findings also imply that the effectiveness of alcoholism treatment cannot be judged solely from studies conducted on socially unstable persons of lower socioeconomic class membership. If negative extratreatment factors typically mask and pervert treatment effects, then studies of patient populations in which such factors can be assumed to be minimal or absent are more appropriate for assessing the effectiveness of alcoholism treatment per se. In effect, the value of alcoholism treatment may be established more directly and less ambiguously in socially stable, middle class patient populations.

Recent studies of treatment outcome for socially stable, middle class alcoholics provide evidence for the substantial effectiveness of alcoholism inpatient treatment (Patton 1979).

In a carefully conducted followup of nearly 800 patients, Patton obtained combined abstention and improvement rates of 92 percent. The followup response rate was 75 percent. At 18 months following treatment, 62 percent of the respondents who had completed the treatment program reported sustained abstinence over the entire followup period and 30 percent reported drinking less than they had prior to treatment. While 18 percent of the patients were unemployed at the time of admission to treatment, a number of occupational levels were represented. Table 3 presents data for education and occupation.

About 52 percent of the patient families had incomes of less than $20,000 annually, including 18 percent who grossed less than $6,000 in 1976. Fourteen percent of the families had incomes of $20,000 to $29,999, while 18 percent had incomes greater than $30,000.

TABLE 3

Education and Occupation of Socially Stable Patients Admitted to Alcoholism Treatment (in Percentages)

Education level	
Less than high school	17
High school graduate	26
Some college	23
College graduate	34
Occupation	
Owners/managers	11
Professional, technical	19
Skilled workers	18
Unskilled workers	4
Clerical, sales, and service	18
Farmers	2
Housewives	15
Retired	4
Students	7
No occupation, disabled	2

SOURCE: Adapted from Patton (1979), with permission. Copyright 1979 by Hazelden Educational Services.

It is apparent, then, that the patient population studied by Patton (1979) was fairly representative of the population of socially stable alcoholics. For this group, the majority of whom were middle class, alcoholism treatment was shown to be highly effective. Other findings that emerged from this carefully conducted study were as follows:

1. Patients who sustained abstinence throughout the followup period reported more improved relationships with spouses, friends, parents, and people at work than did patients who reported reduced drinking or no change in their drinking.

2. Patients who sustained abstinence throughout the followup period reported significantly more improvement than patients who reported reduced drinking or no change in their drinking on the following outcome measures: (a) self-image, (b) job performance, (c) general physical health, (d) general enjoyment of life, and (e) participation in community affairs (Patton 1979).

In general, then, on all outcome measures employed, patients who sustained abstinence over the entire followup period reported greater improvement than did patients who reported reducing their drinking or drinking at the same levels that they did prior to treatment (Patton 1979).

Similar conclusions favoring the effectiveness of alcoholism treatment were reached by Kogutek and Kite (1978) and Kite and Kogutek (1979) in their studies of treatment outcome for socially stable, middle class alcoholics. Of considerable interest in the Kogutek and Kite studies were data concerning changes in health care services for any purpose prior to treatment and following treatment. In the year prior to treatment, 43 percent of the patients were hospitalized at least once and 72 percent had made one or more visits to a private physician. Following treatment, 18 percent of the patients were hospitalized at least once and 57 percent made one or more visits to a private physician during the year of followup (Kite and Kogutek 1979). Treatment outcome studies conducted on employed, socially stable alcoholics at Illinois Bell Telephone, General Motors, Kennecott Copper, Scoville Manufacturing and Economics Laboratory, and in the DePaul Industrial Alcoholism Project have yielded combined abstention and improvement rates of 68 to 80 percent. Moreover, substantial reductions in other health care costs in treated employees have routinely been found in these studies (National Institute on Alcohol Abuse and Alcoholism 1978).

Studies of treatment effectiveness that permit comparisons between treatment groups and minimally or partially treated controls are of interest. However, such studies must be examined carefully since the particulars of program content, patient populations, and staffing patterns may preclude unambiguous generalization of findings across programs that differ in these important respects. Moreover, comparisons of treated groups with minimally or partially treated groups may reveal little beyond a general failure to produce changes in drinking behavior in a particular therapeutic context.

Edwards and his colleagues (1977), for example, showed that neither a single session of advice from a psychiatrist nor a number of half-hour outpatient visits to a psychiatrist nor stays in a psychiatric hospital were particularly effective in producing sustained abstention.[2] Regardless of whether they had received psychiatric advice or psychiatric treatment, only 10 percent of the sample showed sustained abstention by 4 months after intake. Further followup of this sample of men by Orford et al. (1976)[3] showed that by 2-year followup, only 2 percent showed sustained abstention over the entire followup period with the rate falling thereafter to zero. In essence, not one man in the followup sample succeeded in sustaining abstention over time. While Orford et al. (1976) did report some evidence for controlled drinking at followup, these findings appeared to be related to diagnosis with different findings for gamma and nongamma alcoholics.

The patients studied by Edwards et al. (1977) and Orford et al. (1976) were socially stable married men, with nearly half of them drawn from relatively higher social classes (professionally qualified and higher administrative to inspectional, supervisory, and some nonmanual). Since outcome study of socially stable persons of higher socioeconomic class has yielded sustained abstention rates at 18-month followup of 62 percent and combined sustained abstention and improvement rates of 92 percent (Patton 1979), the implications of the Edwards et al. findings are unclear.

Further information concerning minimal or partial treatment compared with increasing amounts of treatment has been provided by Polich et al. (1980). When persons who made contact with eight alcoholism treatment centers and received minimal treatment were compared with persons receiving either low or high amounts of treatment, differences in drinking status and problem rate at followup were observed. The minimally treated sample was lowest in abstention and highest in problem rate of all treated groups. The sample receiving the high amount of treatment showed the highest abstention rate and the lowest problem rate of all treated groups.

[2] Treatment of wives was carried out by social workers.

[3] Publication dates reported here are correct. The 2-year followup was published prior to the 1-year followup.

The results for minimally treated groups versus more fully treated groups reported by Polich et al. (1980) are in agreement with findings reported by McLellan, Luborsky, O'Brien, Druley, and Kron (in press). McLellan and these colleagues showed significantly greater improvement and better posttreatment outcomes in groups of treated alcoholics and drug addicts when compared with partially treated comparison groups.

In general, then, recent studies of treatment effectiveness suggest that alcoholism treatment is effective. This conclusion is derived from studies using patients as their own controls and from studies in which comparisons are made between treated samples and minimally or partially treated comparison groups. For patient populations in which highly negative extratreatment factors associated with social instability and low socioeconomic class standing are minimal or absent, alcoholism treatment has been shown to be highly effective in producing sustained abstinence at followup and improved psychosocial adjustment on a variety of outcome measures.

Differential Response to Treatment

While alcoholism treatment has been shown to be effective, further questions remain to be answered: (1) Are some types of treatment more effective than others? (2) Do certain types of patients do better in certain kinds of treatment?

Historically, not much attention has been paid to the question of whether some types of treatment are more effective than others. Bruun (1963) did study the relative effectiveness of individual psychotherapy by a psychiatrist compared with a multidisciplinary approach that involved visits to an internist, a social worker, and a nurse along with participation in group therapy. The multidisciplinary approach proved more effective. A survey study of psychoanalytically oriented psychiatrists conducted by Hayman (1966) suggested that psychoanalytically oriented individual psychotherapy was largely ineffective with alcoholics.

More recently, Emrick (1979) reviewed a number of studies that investigated inpatient versus outpatient treatment, varying therapy involvement techniques, outpatient therapy methods, chemotherapy, behavioral approaches, and nonbehavioral approaches. Emrick was unable to conclude that differential effectiveness of various treatment methods had been demonstrated. However, McLellan et al. (1980) suggested that the failure to demonstrate differential treatment effectiveness may be due largely to methodological problems involved in investigations of patient-treatment matches.

When McLellan, O'Brien, Luborsky, Woody, and Druley (in press) initially evaluated 460 alcoholic and 282 drug addict patients at followup, patients were found to be generally improved. However, there was no evidence for differential effectiveness among six treatment programs nor for matching of kinds of patients to types of treatment programs. This finding was in agreement with other recent studies of differential treatment effectiveness (Emrick 1979; Polich et al. 1980).

But when McLellan and these colleagues (in press) further divided their samples on the basis of psychological status at admission, different findings emerged. Patients with few psychological problems improved in any treatment program while patients with serious psychological problems showed virtually no improvement in any of the programs. Patients with midrange psychological problems showed significant outcome differences from different treatments, and especially from specific patient-program matches. McLellan and associates viewed their results as lending substantial support to the specificity and effectiveness of different treatment programs. They suggested that recent major national survey studies (e.g., Polich et al. 1980) failed to find specific patient-program matches because of the methodological procedure of collapsing individual program data into treatment modality data.

Treatment Contexts, Program Staffing, and Organizational Climates

It is generally accepted by alcoholism treatment professionals that a variety of treatment contexts is necessary to meet the differing needs of alcoholics and their families. These essential contexts that comprise the components of comprehensive alcoholism services delivery systems are as follows: (1) inpatient, (2) outpatient, (3) residential rehabilitation, and (4) sobering up. While some functional overlap is apparent among treatment contexts, each is intended to provide a particular type of service.

Although there is general agreement among treatment professionals as to the necessity for each of these major components of comprehensive alcoholism services delivery systems, questions do exist with regard to which type of patient should be served in each, lengths of stay, functions performed, organizational atmospheres, staffing patterns, and objectives of service. For the most part, recent research has attempted to provide empirical evidence bearing upon some of these questions.

Inpatient and Outpatient Treatment

Inpatient alcoholism treatment is conducted in general hospitals, psychiatric hospitals, and freestanding alcoholism treatment facilities. General hospital contexts provide emergency, acute, and intermediate medical care services as well as medical detoxification services and primary alcoholism treatment services. Psychiatric hospitals, in addition to primary alcoholism treatment services, usually provide a level of medical care that varies according to the hospital. Psychiatric hospitals may or may not provide medical detoxification services. Freestanding alcoholism treatment facilities generally do not provide acute medical care services and are much more likely to provide nonmedical detoxification services rather than medical detoxification services.

In evaluating reported studies bearing upon treatment effectiveness for inpatient treatment, care must be taken to differentiate these varied functions and contexts of inpatient treatment. For the most part, studies of treatment effectiveness are not addressed to the quality of emergency or acute care services delivered to alcoholics in general hospital settings. Some studies are concerned with either medical or nonmedical detoxification. However, the majority of studies of treatment effectiveness appear to be concerned with primary alcoholism treatment—the largely psychosocial collection of individual, group, and family therapies found in some form or other in the majority of alcoholism treatment programs.

Until a few years ago, the major approach to alcoholism treatment was longer term institutionalization in hospitals. More recently, however, the planned length of inpatient stay for primary alcoholism treatment has been reduced for the typical alcoholic patient, with necessary exceptions made in individual cases. The concept of aftercare or continued outpatient treatment has been added as a necessary component of effective treatment (Costello 1980; Glatt 1978; Vannicelli 1978). The modal treatment approach has become shorter term intensive inpatient treatment followed by a period of continuing treatment on an outpatient basis (Diesenhaus in press). Depending upon need and circumstances, patients are discharged from inpatient services to their homes or to some sort of supervised living arrangement.

The optimal length of stay in inpatient treatment has not yet been determined. There is evidence, however, that it could be shortened considerably for some patients (Kish and Herman 1971; Willems et al. 1973). A recent study on a sample of male patients drawn from a single Veterans Administration hospital provided some data on stays of 60 days rather than 84 (Kish et al. 1980). This study showed that for most measures at 6-month followup, no differences were apparent between patients who had stayed 60 days and those who had stayed 84 days. However, for sustained abstinence over the followup period, a fairly large and statistically significant difference was found, with a larger number of shorter stay patients (59 percent) reporting drinking episodes than longer stay patients (35 percent).

A study of male veterans hospital patients by Page and Schaub (1979) provided comparisons at 6-month followup for 86 male alcoholics who had been treated in either a 3-week or 5-week inpatient program. Differences were not apparent at followup on a number of measures of personality, posthospital adjustment, and drinking behavior.

It is entirely possible that a single optimal length of stay will remain elusive and appropriate lengths of stay will be found to vary in accordance with patient and family characteristics and a host of situational variables. Baekeland (1977), in his review of the literature, pointed to the relationship between socioeconomic status and length of stay: Higher socioeconomic status patients tend to require shorter inpatient stays while lower socioeconomic status patients require longer stays. Various programs serving higher socioeconomic patients apparently have already incorporated findings on socioeconomic status and length of stay into their programs since lengths of stay in these programs are typically in the range of 21 to 35 days. In at least one instance, a provider has instituted a program consisting of 2 weeks of inpatient primary treatment for selected patients followed by intensive outpatient multiple family group treatment.

McLellan, O'Brien, Luborsky, Woody, and Druley (in press) reported results that suggested that a longer time in treatment was associated with better outcomes for male alcoholic patients who showed either low- or midrange psychological problems but not for patients with high levels of psychological problems. It should be pointed out, however, that alcoholic patients with high levels of psychological problems did not improve in any of the programs studied by McLellan and associates.

With regard to inpatient-outpatient comparisons, Emrick (1979) reviewed four recent studies that assigned patients randomly to either inpatient or outpatient services. For "socially intact" alcoholics, the evidence for differential effectiveness between these two settings was inconsistent. For "socially deteriorated" alcoholics, no differences were found except that these patients received better medical attention in inpatient settings.

McLellan and the colleagues mentioned immediately above (in press) reported that, while alcoholics with low numbers of psychological problems did well in either inpatient or outpatient treatment, patients with midrange numbers of problems showed differential response to treatment settings. For patients with midrange psychological problems who also had greater employment and/or family problems, outpatient treatment led to worse outcomes. On the other hand, patients with midrange psychological problems who also had greater than average legal problems did poorly in either of two inpatient programs.

As the McLellan group's (in press) results show, the appropriateness of admission to inpatient rather than outpatient services may vary as a function of patients' psychological problems at admission. Medical problems, however, must be considered as well. Alcoholics are admitted to inpatient hospital programs for many different purposes. Some of these are as follows: medical detoxification and emergency care; treatment of alcohol-related diseases such as pancreatitis, cirrhosis, cardiac diseases, respiratory diseases, cardiomyopathy, and gastritis; diagnosis and treatment of non-alcohol-related physical problems simultaneously with alcoholism rehabilitation; treatment of a concurrent psychiatric disability; primary alcoholism counseling and rehabilitation (Hore 1976; Schuckit 1979*b*).

In addition to psychological status and medical condition, various social factors enter into the appropriateness of inpatient versus outpatient care. Even in the absence of severe psychological or medical problems, some patients appear unable to achieve initial sustained abstention without a brief period of inpatient care. A host of situational and social factors involving marriage, family, employment, interpersonal relationships, community, and cultural considerations indicate that, for some patients, outpatient care alone is not likely to prove effective.

While inpatient services are a necessary component of a comprehensive alcoholism services delivery system, it has been apparent that not all inpatient services must be based in a hospital. For a substantial number of patients, non-hospital-based inpatient primary alcoholism treatment services can be delivered effectively in freestanding alcoholism treatment facilities. The specialized alcoholism treatment facilities typically provide medical screening and referral of patients for hospital-based treatments where indicated.

In general, then, with regard to treatment context, the range of options has continued to increase. Depending upon psychological status, medical condition, and a host of sociocultural and situational factors, patients seeking alcoholism treatment may receive such services in hospital-based inpatient programs, non-hospital-based freestanding alcoholism treatment facilities, or outpatient clinics. Research bearing upon the appropriateness of treatment in one or the other of these contexts for particular patient populations is continuing to appear in the literature.

Staffing Patterns

Studies that examine the relationship between outcome of treatment and staffing patterns have been infrequent. Stinson et al. (1979) examined two different staffing patterns and the effects of these on treatment outcome. Peer-oriented inpatient care was contrasted with more intensive inpatient care provided by a larger number of professionals. No differences were apparent at followup between groups of patients treated in one or the other of the inpatient staffing orientations. The population studied by Stinson et al. was drawn from lower socioeconomic levels (Social Class V persons with menial to semiskilled competencies). Whether the findings can be generalized to other patient populations and inpatient programs is unknown. However, these results by Stinson et al. seem similar to results reported by Armor et al. (1976) and Polich et al. (1980). The latter investigators were not able to demonstrate a significant effect on outcome for increasing professionalization of treatment staffs.

In the context of a study of halfway houses, Martin and Segal (1977) found that more highly educated staffs made greater demands on, and expected more from, residents. However, "better staffing" patterns were also associated with shorter lengths of stay, an outcome that Ogborne and Smart (1976) considered to be a measure of program ineffectiveness.

Institutional Atmospheres

While Ogborne and Smart (1976) concluded that halfway houses for skid row alcoholics are not particularly effective, Rubington (1979) argued that few studies of halfway houses have actually put the halfway house theory of rehabilitation to the test. Rubington pointed out that the halfway house movement rose in reaction to the failure of large, impersonal, bureaucratic treatment organizations. The pioneers of the halfway house movement felt that in order to be effective these houses should accommodate only a small number of residents, have elementary kinds of social organizations, enforce only a few rules, and, most important of all, maintain an informal, "homelike atmosphere."

Rubington selected four halfway houses that differed in terms of number of beds, number of staff members, program, physical plant, and location. The houses were classified according to culture, social organization, and physical plant. Measures derived from this classification permitted Rubington to place each house on a continuum of atmosphere ranging from "institution" to "home."

All of Rubington's data pointed to a general conclusion that the more informal the halfway house, the greater its effectiveness. The house with the lowest score on the index of institutional atmosphere had the longest length of stay, the highest percentage of abstinent departures from the residence, and the lowest percentage of readmissions. Rubington's data indicate that the original concept of the halfway house movement is viable. Moreover, studies of effectiveness must differentiate among houses on institutional atmospheres for an accurate picture of halfway house effectiveness to emerge.

Detoxification: Contexts and Management

Depending upon a number of factors, safe detoxification may take place in either a medical or a social setting. The management of withdrawal may involve either medical or psychosocial procedures or a combination of the two. This distinction between context of withdrawal and management of the withdrawal process permits a more accurate representation of current practice than that implied by the dichotomy "medical model versus social model detoxification." The options available are more numerous than those implied by any simple dichotomy. In actuality, patients in medical settings are likely to be exposed to both medical and psychosocial procedures while some patients in social settings may receive medical management of the withdrawal process.

Decisions concerning where and how detoxification for particular patients should be managed involve a number of factors. Severity of withdrawal symptoms is of considerable importance. Patients showing severe symptoms require the close medical supervision and management available in an inpatient hospital context. For the most part, patients experiencing mild or moderate withdrawal symptoms may be treated in social contexts. However, patients with alcohol-related or non-alcohol-related complications may require detoxification in a medical context regardless of the severity of withdrawal symptoms. For example, the added stress of even mild to moderate withdrawal symptoms may pose levels of risk for patients with cardiac disease, chronic respiratory disease, or essential hypertension that require closer medical supervision and management than are available in social settings. Similarly, patients with visible injuries, seizure disorders, florid psychiatric symptoms, histories of previous withdrawal complications, and disruptive, unmanageable behavior require observation and treatment in a medical context as detoxification proceeds.

While it is difficult at present to estimate precisely the numbers of persons who could be detoxified safely in social settings rather than medical settings, recent research and experience have suggested that these numbers may be substantial. Hore and Russell (1979) reported that 54 percent of the first 100 skid row men admitted to a detoxification ward were rated as showing withdrawal symptoms. Ballenger and Post (1978) found that 91 percent of patients admitted to a naval hospital alcoholism rehabilitation unit experienced either mild or moderate withdrawal symptoms. Advocates of social setting detoxification have pointed out that 3 to 5 percent of public inebriates brought to detoxification centers in lieu of arrest and jail require immediate medical attention (O'Briant et al. 1976; Smith 1980). These estimates are based upon clinical trials carried out in San Francisco and Ontario (O'Briant et al. 1976; Smart 1977) and on accumulated experiences of one State system over the past 6 to 8 years (Smith 1980). A number of investigators have suggested that social setting detoxification may be the treatment of choice for persons experiencing either mild or moderate withdrawal (Ballenger and Post 1978; Hore and Russell 1979; Pattison 1979).

Reports from States have indicated that several alternatives are presently employed. A number of States have created systems of nonhospital social setting detoxification centers as alternatives to both jail and hospitals (e.g., Colorado, Idaho, South Carolina, California, and Illinois). Other States have developed nonhospital medical detoxification centers (Florida and Massachusetts) (Diesenhaus in press). Still other States continue to rely on hospital-based medical management of detoxification. Further research is necessary to establish more precisely the risks associated with variations in the context and management of withdrawal for various clinical populations.

Interest in the possibility of limited use of ambulatory detoxification with carefully selected patients has been expressed recently (Kolodner 1977; Pattison 1979; Tennant 1979). Kolodner (1977) developed a detailed method for carrying out ambulatory detoxification with selected patients. Recognizing that providing patients with prescriptions for minor tranquilizers and advising them to stop drinking would be inappropriate, Kolodner recommended a controlled day care procedure. In Kolodner's method, the patient returns to the clinic daily for medication and counseling. Prescriptions are not written and family and friends are encouraged to participate in the process. Whether ambulatory detoxification procedures can be applied more widely is not known. Variations in such things as severity of withdrawal, other medical complications, patient motivations, family situations, occupations, and social environments may limit such procedures to a small number of patients. Ambulatory detoxification is not yet accepted by physicians as a standard procedure (Schuckit 1979*b*).

Treatment Goals

While particular investigators have continued to show an interest in the possibility of nonproblem or controlled drinking as a viable alternative treatment goal for some alcoholics (e.g., Miller and Caddy 1977; Nathan and Briddell 1977; Nathan et al. 1978; Pattison et al. 1977; Polich et al. 1980; Popham and Schmidt 1976; Sobell and Sobell 1978), the large majority of clinical workers in the field of alcoholism treatment continue to perceive abstention as the ideal treatment goal for alcoholics.

The possibility of nonproblem drinking among alcoholics received further attention recently when Armor and associates (1976) reported a 22 percent "normal drinking" rate among persons who had previously been admitted to alcoholism treatment. Armor et al. did not recommend either normal or controlled drinking as a treatment goal but did suggest that the possibility be explored further for some alcoholics.

Criticisms of the study by Armor et al. centered on definitions of normal drinking, adequacy of the diagnosis of alcoholism, sample bias due to large numbers of subjects lost to followup, and reliability of alcoholics' self-reports of quantity and frequency of consumption as well as symptoms and problems (Emrick and Stilson 1977). An attempt to provide a partial replication of the results of Armor et al. by Paredes et al. (1979) yielded important differences. In the Paredes et al. study, abstinent patients showed the lowest relapse rates by 18-month followup and normal drinking patients showed the highest relapse rates.

Wallace (1979) reanalyzed Armor et al.'s data and argued that the samples were biased and that measurement of normal drinking was invalid. Wallace concluded that the normal drinking rates reported by Armor et al. (1976) were in serious error and could not be generalized to any population.

In the context of a methodologically improved study and utilizing more rigorous definitions, Polich and colleagues (1980) reported a substantially lower nonproblem-drinking rate at 4-year followup for the same cohort of persons who had previously been admitted to alcoholism treatment. At 4-year followup, the rate of nonproblem drinking corrected by the authors for invalid measurement (underreporting) was 14 percent. However, this rate for nonproblem drinking was derived from self-reports of drinking behavior during the 30-day period immediately prior to the survey.

Estimates of sustained nonproblem drinking are of greater interest since it has been recognized for some time that substantial numbers of alcoholics appear capable of drinking in a nonproblem or controlled manner for brief periods of time but eventually relapse into problem drinking.

When drinking behavior was examined from admission to final followup, 7 percent of those followed reported sustained nonproblem drinking. The authors did not correct this sustained nonproblem drinking rate for invalid measurement (underreporting) and for the likelihood of initial diagnostic error of some degree. If these corrections had been made, reductions in the sustained nonproblem drinking would be likely.

The issues involved in the possibility of nonproblem drinking as a treatment goal for alcoholics can be stated in terms of several questions: (1) How many alcoholics can be expected to achieve this goal? (2) Over what period of time can nonproblem drinking be sustained? (3) Is it possible to predict in advance of treatment which patients are likely to achieve nonproblem drinking and which are not? (4) What are the nature and levels of risk that inhere in varying definitions of nonproblem drinking? (5) Are effective methods currently available for increasing the probability of nonproblem-drinking goal attainment?

Reliable empirical evidence does not yet exist to answer the majority of these questions. With regard to the first and second questions, the results by Polich et al. (1980) suggest that a substantial minority of persons admitted to alcoholism treatment are apparently capable of short-term nonproblem drinking but sustained nonproblem drinking is not likely. Attempts to predict in advance of treatment the small numbers of patients likely to succeed in sustained nonproblem drinking would, on the basis of available empirical evidence, result in extremely large errors of prediction and a correspondingly large number of incorrect clinical decisions. The nature and levels of risk associated with varying definitions of nonproblem drinking are not known. Methods that reliably increase the probability of sustained nonproblem drinking among alcoholics have not yet been demonstrated scientifically.

In effect, available scientific evidence does not support clinical implementation of sustained nonproblem drinking as an alternative treatment goal for alcoholics at the present time. On the other hand, nonproblem drinking may be a reasonable goal for problem drinkers other than alcoholics. Some adolescent alcohol abusers and persons whose drinking appears to be situationally determined may be candidates for treatment with a non-problem-drinking goal. Even for problem drinkers other than alcoholics, however, further research on non-problem-drinking goals is necessary before widespread clinical implementation can be recommended.

Refinements in Treatment Methods

Further refinements in treatment research and methods have centered on pharmacotherapy, behavioral techniques, and family therapy. The following discussions on treatment research and methods and programs for special-need populations have been drawn substantially from a review prepared by Diesenhaus (in press).

Pharmacotherapy

There have been no remarkable developments in the pharmacotherapy of alcoholism since publication of the *Third Special Report on Alcohol and Health* (U.S. Department of Health, Education, and Welfare 1978). While pharmacotherapeutic agents have continued to be used as adjuncts, a specific pharmacotherapy of alcoholism does not yet exist.

Several recent studies have attempted to determine whether use of pharmacotherapy could aid in retaining patients in outpatient treatment (Smart and Gray 1978) and detoxification (Reed and Mandell 1979). The results are equivocal. Smart and Gray (1978) suggested that, contrary to the growing trend, receiving medical evaluation and medication was related to retention in treatment for lower middle class and lower class alcoholics. The interaction between type of treatment (individual and group counseling) and medication suggests that retention was related to more intense treatment and contact when

pharmacotherapy was an important component of the overall treatment plan. On the other hand, administration of chlordiazepoxide to aid withdrawal in a hospital detoxification service was not related to completing the 7-day program (Reed and Mandell 1979).

Disulfiram (Antabuse) is no longer used alone in treating chronic alcoholism but is used as an adjunct to a comprehensive treatment regimen (Kwentus and Major 1979). The effect of disulfiram depends on a complex set of pharmacological and psychological actions that must be considered in planning treatment. The major value of disulfiram appears to be as a deterrent to resumed drinking (Ewing 1980); its deterrent effect is more likely to be psychological than chemical either as an implant or taken orally (Kitson 1978; Kline and Kingstone 1977; Kwentus and Major 1979; Sauter et al. 1977; Silver et al. 1979). The act of taking the drug represents the alcoholic's determination to avoid drinking since he or she is aware of the unpleasant physical consequences; disulfiram does not work by reducing craving (Silver et al. 1979).

Concern continues over low patient compliance with the prescribed regimen of disulfiram therapy. The development of tests to measure compliance has been suggested. Paulson et al. (1977) suggested a breath test measuring the excretion of carbon disulfide, effective for 15 to 16 hours after a dose of disulfiram. Use of the test yielded positive results for only 25 of 52 patients who claimed to be taking disulfiram. Gordis and Peterson (1977), using a urine test, found that 20 percent of those studied were not using the drug as they had claimed. Observation of ingestion is commonly used, especially in court-ordered treatment. A better method is to select patients on the basis of prior empirical studies of compliance and favorable outcome (Baekeland 1977; Kwentus and Major 1979). Controlled studies suggest that the patient who does better on disulfiram is older, better motivated, able to form dependent relationships, and more likely to have had blackouts and to have compulsive personality traits. Uncontrolled studies suggest that the patient who does better is more socially stable. Patients who do not do well are moderately to severely depressed, manifest sociopathic features, have a highly compulsive drinking pattern, and seem unable to stop after a few drinks (Baekeland 1977). The role of motivation is critical; the patient who accepts the drug regimen eagerly (unless manifesting sociopathic personality) does better than the reluctant participant. Using group discussions to support the taking of the drug through developing its continued use as normative for group membership may aid compliance. Contingency contracting, tying continued use of disulfiram to a strong reinforcer, can be effective (Baekeland 1977). Disulfiram has been reported to have mild sedative effects. Used at bedtime, it may relieve the sleep difficulties and mild anxiety common in the early stages of postwithdrawal abstinence (Kwentus and Major 1979). Continued attention must be paid to physical signs contraindicating use and further research on possible side effects is necessary.

Many alcoholics manifest depression when they seek help. Although the symptoms resemble those seen in primary affective disorders, they are generally less severe, seem related to stressful life events that often accompany uncontrolled drinking, appear time limited, and are, in part, a direct result of consumption of large amounts of a nonselective general depressant drug (Goodwin 1979; Schuckit 1979*a*; Wallace 1977). While there has been a history of treating alcoholics with various antidepressant drugs, there is no evidence from controlled research that antidepressants are more effective than placebos in reducing excessive drinking or related problems. However, following the demonstration in several uncontrolled clinical trials that depressed alcoholics treated with lithium were more improved at followup than controls receiving placebos, controlled studies of the effectiveness of lithium therapy have developed into a major area of investigation (Goodwin 1979; Merry 1979). Schuckit (1979*a*) suggested that lithium may be effective with secondary alcoholics suffering from a primary affective disorder. However, he also suggested that lithium might not be effective in the treatment of primary alcoholism. In effect, while lithium may be useful in treating primary affective disorder in a smaller number of persons who also have drinking problems, it is not a method of demonstrated effectiveness in the treatment of persons whose primary problem is alcoholism. The possibility of serious side effects indicates that lithium patients must be selected carefully and monitored continuously.

Behavioral Assessment and Treatment

Behavioral assessment involves direct observation of target behaviors, either in the laboratory, in some other controlled or simulated environment, or in the natural environment. Behavioral assessments are designed to identify the antecedent events that trigger the target behavior; the maintaining stimuli that reinforce the target behavior; the range of factors in the environment that reinforce both target and nontarget behaviors; the intensity, frequency, and pattern of the target behavior; and the reinforcers in the environment that can reduce or eliminate the target behavior. This identification is accomplished through pretreatment observation of relevant target behaviors lasting as long as 2 weeks to establish baseline rates. A program to change those factors is then developed by the patient and therapist working together. Periodically during treatment and at the end of treatment, observations are made to note changes in the target behavior.

Chemical aversion techniques, blood alcohol level discrimination training, and contingency contracting appear to have won some support as techniques (Nathan and Lipscomb 1979). Findings of effectiveness for chemical aversion therapy must be tempered by recognizing that no controlled studies have been done and that the setting for administration of the chemical aversion technique is generally an inpatient unit which also offers other forms of treatment, e.g., AA, group therapy, social and recreational therapy. Its effectiveness as a treatment in the absence of these other treatment methods is unknown. The value of aversion therapy is to suppress alcohol misuse while the person is learning new modes of responding that are incompatible with excessive drinking (Miller 1976). Aversion therapy can be effective as part of a carefully designed treatment program that also includes counseling, attention to social support systems (the family, AA), and aftercare booster sessions (Nathan and Lipscomb 1979).

Consensus is emerging that electrical aversion procedures are ineffective. Questions have been raised regarding the value of systematic desensitization when used alone (Nathan and Lipscomb 1979). The value of covert sensitization in the treatment of alcoholism has also been questioned (Little and Curran 1978).

Blood alcohol discrimination training based upon internal cues is inappropriate for generalization from an experimental method to large-scale clinical use because of serious questions about the ability of alcoholics to estimate their blood alcohol level (Nathan 1978). Assertiveness training and biofeedback training have already moved into large-scale clinical use; needed now are a series of controlled studies testing under which conditions and with which varieties of alcoholics and problem drinkers these methods are appropriate.

The value of any one behavioral technique used alone has been questioned. All techniques are administered in an active environment with often unspecified characteristics. Proponents of behavioral therapy for alcoholism have advocated broad-spectrum behavioral treatment programs that combine a number of different techniques. Individualized behavior therapy for alcoholics (IBTA) is such a package; it includes four major and several minor components. The major components are (1) shock avoidance procedures, (2) videotaped self-confrontation with drunken behavior, (3) availability of alcohol and drinking as part of the treatment program, and (4) individualized talk therapy focused on training in problem-solving skills (Sobell and Sobell 1978). A difficulty with the broad-spectrum approach is that there is no simple way of knowing which component is contributing the most to treatment outcome. Studies need to be carried out on equivalent samples comparing different arrangements of components.

There appears to be an acceptance of behavioral therapy techniques, if not theory. It is possible to incorporate behavioral treatment methods within a treatment regimen that has a medical orientation rather than a learning theory orientation, and many treatment programs have included specific techniques like biofeedback training, contingency contracting, and assertiveness training (Cummings 1979; Nathan and Lipscomb 1979; Poley et al. 1979; Wallace 1978). For example, some alcoholism programs have tried to convey clear-cut behavioral expectations to new admissions through the use of written treatment contracts, didactic presentations, written materials, and community meetings. Contingency management contracting techniques, however, are more detailed, are based

on behavioral assessment, and are more consistently applied; the contracts represent an improvement over the less structured prior efforts. The focus is on specifying the target behaviors and the consequences of emitting those behaviors. More widespread use of these evaluation procedures in developing a treatment contract could be helpful to a variety of alcoholism treatment programs which do not now consistently follow through on the fairly standardized contracts developed with clients at the time of admission (Miller 1976). Contingency contracts have three basic components: (1) a written agreement specifying the simple target behaviors to be increased or decreased, (2) the reinforcement contingencies attached to compliance and to noncompliance, and (3) the development through behavioral assessment of what potential environment reinforcers exist. The contract should be developed through mutual agreement and signed by both the therapist and the client if the contingencies are to have any potency.

Contingency contracting has been used by Cummings (1979) in developing a treatment method for addictive personalities. This method (exclusion therapy) involves a mandated 6 months of group therapy; the group therapy is preceded by 4–12 individual sessions for withdrawal and development of motivation and involvement. Abstinence is demanded as a condition of treatment; failure to come to a session "clean" leads to exclusion. Appearing at treatment intoxicated also leads to exclusion.

Family Therapy

Over the last 5 years, there has been a slight increase in the use of family therapy in the treatment of alcoholism (Jantzen 1977; Kaufman 1979; Sowder et al. 1979; Steinglass 1979*b*). Family therapy is a term used to describe a wide variety of therapeutic techniques used by clinicians who share a common conviction that disturbed family life plays a significant role in individual pathology and that treating the family will produce positive change (Steinglass 1979*b*). For some family therapists, the treatment targets are not the abusive drinking of the alcoholic person but rather the interactional and communication patterns of the family. Specific questions of interest are: (1) What differences exist in communication patterns when the identified patient is sober and when intoxicated? (2) What are the characteristic patterns of relations between family members when alcohol is present and absent?

In 1978, NIAAA-funded projects reported using individual therapy most frequently, with 50 percent of outpatients receiving an average of 4.9 hours per client episode. Group counseling was used next most frequently, with 25 percent of the clients receiving an average of 14.3 hours of treatment. Only 9 percent of the clients were involved in family treatment, for an average of 3.3 hours. Women clients (14 percent) were more likely to participate in family treatment (Ferguson and Kirk 1979).

Research into the structure and dynamics of the alcoholic's family preceded active intervention with the family. Early studies focused on the spouse (usually the wife) and on his or her problems; early interventions involved supporting the wife during efforts to bring the alcoholic into treatment. Current interventions include continued work both with the spouse alone and with the entire family. Also used is multiple family therapy where a number of families are treated together in a group setting (Steinglass 1979*a*).

There is an increasing tendency to view the alcoholic's drinking in terms of his or her interaction with the multigenerational family. During the diagnostic phase, emphasis is placed on determining how the identified patient's alcoholism helps the family to maintain its homeostatic balance (Davis and Hagood 1979; Steinglass 1979*a,b*). Current efforts are primarily directed at developing and describing improved techniques for diagnosis and intervention with the family system. Controlled experiments comparing family therapy with other treatment methods are rare (Jantzen 1977; Sowder et al. 1979).

Steinglass (1979*a*) experimented with the joint admission of an alcoholic and his or her nonalcoholic spouse. The marital couple lived together on the ward and participated in activities, both together and separately—e.g., a group for spouses only, a group for patients only, and a couples' group. Alcohol was freely available. The joint admission allowed staff to observe the couple's interactions and provide feedback about their communication and interaction patterns

when alcohol was present and absent. The spouse had the same opportunity as the alcoholic to learn about alcohol and its effects, to experience the social climate of the treatment unit, and to learn the same approach to handling alcohol and other problems. Findings showed slight positive changes in drinking patterns, marked changes in interactional behavior, and reduction of psychiatric symptomatology in the nonalcoholic spouse.

Recently, descriptions of the application of family therapy to various special population groups have begun to appear—for Hispanics, employed alcoholics (Mock et al. 1979; Palkon 1979), elderly alcoholics (Rathbone-McCuan and Triegaardt 1979), and youths (Kaufman 1979; Speigel and Mock 1978). Several examples of these variations will be given.

A variation of Minuchin's structural theory and therapy was used with Cuban immigrant families of alcohol and/or drug abusers (King 1976; Szapocznik et al. 1977). The researchers hypothesized that alcohol and drug abuse were caused by difficulties in acculturation. They found family therapy to be the treatment of choice whenever symptomatic substance abuse appeared in a child or an adolescent and, particularly, when intergenerational and acculturational differences disrupted the family's process of conflict resolution and the parent's executive role in the family. Individual therapy was sufficient when the client was moderately acculturated, resourceful, and educated. Modifications of Minuchin's methodology were developed to make it coincide more closely with the Cuban value system.

Ziegler-Driscoll (1979) described a study involving both alcoholics and drug abusers in family therapy while inpatients in a combined treatment program. No differences were found in the dynamics of families of drug addicts or alcoholics; the same methods were used with equal success in both groups even though it is widely believed that alcoholics and drug abusers differ in age, personality, and family dynamics.

The use of family systems theory and techniques in the assessment and referral process for employee assistance programs (EAPs) was advocated by Mock et al. (1979). Family members are included in initial assessment sessions; a minimum of three such sessions is seen as necessary to develop family system data, obtain drinking behavior data on all members, and engage all the family members in the process. A treatment plan involving all family members is developed and a family treatment contract is designed which includes the followup responsibilities of the EAP counselor. Referral is made to family-oriented community agencies. Followup sessions involve all family members and the treatment personnel. Other procedures are carried out as they would be in a traditional individually oriented EAP.

Moos et al. (1979) found that successful outcome after completing a residential program was related to certain characteristics of the family environment to which patients returned—cohesiveness, active pursuit of leisure time activities, and absence of conflict. They suggested that gathering systematic information about the family environment with a simple assessment technique such as their family environment scale should be done routinely. Their rationale for this procedure was that traditional patient-focused alcoholism treatment can be undertaken when family cohesion is high but is likely to be unsuccessful when it is low. Family therapy appears necessary when family cohesion is low.

For family therapy to become more generally used, there will need to be well-controlled studies of its effectiveness, more extensive training of alcoholism counselors in the application of the method, and development of means to determine when its use is appropriate. The need for more attention to the inclusion of the family in alcoholism treatment is underscored by the knowledge of the high risk of future alcoholism and other forms of individual or social pathology incurred by children of alcoholics.

Treating the Public Inebriate and Skid Row Alcoholic

The widespread dispersion of detoxification centers as a result of the passage of the Uniform Act (National Institute on Alcohol Abuse and Alcoholism 1980; Scrimgeour 1976) has brought the treatment system into contact with public inebriates who do not fit the stereotype of the homeless unemployed skid row alcoholic but who are more likely to be working residents of the community. Attractive new facilities have been built in some communities and receive a number of police and family referrals of blue-collar and white-collar alcoholics who in previous years might have been taken home to sleep it off or to a hospital emergency room. Morrissey and Schuckit's study (1978) of female admissions to countywide detoxification centers showed that admissions were heterogeneous with respect to social class and primary diagnosis. Some of the women were diagnosed as not being alcoholic (28 percent); of the remainder, 53 percent were diagnosed as being primary alcoholics and 19 percent were diagnosed as being alcoholics secondary to preexisting antisocial personalities or affective disorders. There was a range of social classes represented also—24 percent in the highest class, 33 percent in the middle, and 43 percent in the lowest.

This study provides an example of the diversity of persons now being admitted to nonhospital detoxification centers and points up the need to avoid stereotyping all nonhospital detoxification center admissions as skid row alcoholics. The major proportion of detoxification admissions would appear to be from that group identified by Kissin (1977) as the socially disrupted inner-city alcoholic and the blue-collar alcoholic. Raising the treatment effectiveness rate for the public inebriate population will require further partitioning into meaningful subgroups and appropriate referral. This distinction between the skid row and working class public inebriate is not currently being made at the national level. NIAAA-funded public inebriate programs tend to be located in skid row areas and, therefore, see fewer of the "inner-city socially disrupted," "blue-collar," or "white-collar" alcoholics who have a greater degree of social stability and more personal resources (Kissin 1977).

In 1978, NIAAA funded 20 public inebriate programs (PIP), which served an estimated 19,583 persons. Monitoring data are available for 17 of these projects. There were 4,378 intakes; a review of the characteristics of these admissions can be helpful in understanding the unique problems in trying to treat the skid row public inebriate (Ferguson and Kirk 1979). The population served by these projects is very different from that served in the other NIAAA categorical programs. It is the oldest, with an average age of 42 years; the most socially deteriorated, with 52 percent divorced or separated and 81 percent unemployed; and the most seriously alcoholic, with an average of 15.5 years of heavy drinking and an average consumption of 8.8 ounces of absolute alcohol per day. It is the special population that is most likely to have had prior treatment (53 percent). The typical admission to one of these skid row programs is an unemployed white male. Education completed is only 9 years, the lowest for any categorical program, and the likely occupation is laborer. Annual household income, again, is the lowest of any category at $4,103 per year. These are all characteristics associated with social instability, severity of alcohol dependence, and a poor prognosis (Annis 1979; Emrick 1979; Gibbs and Flanagan 1977; Kissin 1977).

The majority of public inebriates were either self-referred (33 percent) or referred by other treatment programs (22 percent); police referrals constituted only 5 percent. Treatment was more likely to be inpatient (59 percent) than outpatient (54 percent), since their drinking problem is seen as more severe. Public inebriate residential stays tended to be longer than for clients in other categories; a longer stay was particularly true for acute medical care hospitalization. Outpatient treatment was focused on group counseling and vocational assistance services. Even with the overall client group manifesting poor prognosis, positive change was noted after 180 days for followup samples—decreases in days drinking, alcohol consumed, and Impairment Index scores. The percentage abstinent in the preceding 30 days rose from 8 percent prior to treatment to 46 percent after treatment. The percentage working rose from 21 percent to 43 percent.

In contrast, recent studies of the effectiveness of the Ontario detoxification-halfway house system have raised questions about the value of the public health approach to the treatment of the public inebriate (Annis 1979; Annis and Liban 1979; Annis and Smart 1978; Ogborne and Wilmot 1979; Smart 1977; Wilmot 1978). Although this has been a rather pessimistic series of studies, there have been a number of important findings. The studies confirm the predictions of critics such as Pittman (1977) who argued that the passage of the Uniform Act alone was not sufficient to eliminate the public inebriate problem and pointed out the difficulties that would be encountered in attempting to develop the full range of comprehensive services needed.

Evaluation of the impact of decriminalization of public intoxication needs to be tempered by the recognition that not enough funds have been appropriated to develop the needed resources (Scrimgeour 1976). Evaluation also needs to be tempered by recognizing that some of the original goals and expectations were incorrect. The adoption of the Uniform Act has done much to destigmatize alcoholism in general and to increase access to alcoholism treatment, but it has not brought chronic public inebriates into treatment voluntarily, or kept them in treatment, as originally intended (Grad 1978).

An implicit expectation in the minds of many was that a network of detoxification centers for public inebriates would lead to "curing" their alcoholism. This expectation was wholly unrealistic in that it did not take into consideration the nature of skid row alcoholism as a chronic, relapsing phenomenon. Other factors were overlooked: the resistance to following through on rehabilitation shown by many alcoholics once past the acute crisis of withdrawal; the skid row and other clients' psychological dependence and/or involvement in a drinking subculture which cannot be countered in a 2–to–14-day treatment encounter; and the need for multiple admissions if treatment personnel are to develop a rapport with the skid row alcoholic that could lead to participation in an extended rehabilitation program.

Skid row alcoholics are not all the same; four types of skid row alcoholics may be identified using employment and mobility/transiency dimensions: (1) highly mobile workers, (2) working residents, (3) semiemployed residents, and (4) the homeless unemployed (Hobfoll et al. 1980). The stereotypic impression of the skid row alcoholic is most clearly met by the homeless unemployed; this socially debilitated group is the one most frequently encountered in the skid row detoxification center, yet members of all four groups drink heavily and may be admitted for care. Each type has different treatment needs. The desire for treatment is low for homeless unemployed skid row alcoholics; there is a pattern of brief, sporadic interactions with helping agencies, getting immediate needs met and moving back into their pattern of socializing and drinking on the street. Breaking this pattern will require recognition of its cultural and personal significance.

A more positive picture is seen in the study of a Salvation Army skid row long-term (6 months) recovery program (Moos et al. 1978). Residents showed significant improvement on seven of nine outcome criteria at 6-month followup. The authors attributed these positive findings to the social climate and treatment approach of the program. The social environment was integrated and cohesive, staff were in touch with the residents, and staff and clients agreed in their perception of the program. The program was practically oriented with vocational training and counseling emphasized through an on-site training program. The treatment approach emphasized improving the client's overall functioning rather than only reducing or eliminating drinking. Active involvement in the program was stressed, and degree of participation was positively related to success at outcome (Bromet and Moos 1977).

The ideal configuration for services to skid row alcoholics was described by Blumberg et al. (1973). The configuration included a comprehensive diagnostic, referral, and treatment facility that could treat not only the core problem of the psychological dependence on alcoholism but also the accompanying problems of general health, emotional disruption, and vocational inadequacy. Elements required were identified as (1) adequate and easily available detoxification facilities; (2) long-term (12 to 18 months) residential primary alcoholism treatment facilities away from skid row but within the home community; (3) several types of supervised housing—board and care homes for the dependent, rooming houses for the acculturated, temporary housing for the transient (to replace the cubicle hotel), and a domicile for those requiring long-term nursing or psychiatric care; (4) vocational rehabilitation and job placement, including operation or supervision of an employment agency to prevent exploitation; and (5) intensive casework by a counselor who follows the client through the various facilities over a period of years, providing crisis intervention as needed, and support for any moves toward abandoning the skid row lifestyle.

Few of the skid row public inebriate programs funded have come close to developing this ideal configuration. Therefore it is not surprising that existing systems have been found to be relatively ineffective. The Ontario system involves primarily detoxification centers and halfway houses, although a domicile and outpatient services are also available. One of the reasons for the failure of this limited system to meet the goals outlined by the legislature is the shortage of detoxification beds (Annis 1979; Smart 1977). Another failure is the absence of the network of supportive services outlined by Blumberg et al. (1973). While no public inebriate treatment program in this country has been studied as intensively as the Ontario system, indications are that the findings would be similar for the majority of such programs. Some of the cities with NIAAA-funded projects (e.g., Detroit, Philadelphia) come closer to the ideal configuration than many other cities.

Treating the Problem-Drinking Driver

The relationship between alcohol use and traffic safety will be discussed elsewhere in the report. This section will deal briefly with the treatment of the problem-drinking driver who is most frequently identified through the arrest process and referred for evaluation and treatment by the court. The Federal Government, through NIAAA, has been supporting specialized treatment services to problem-drinking drivers since 1971. This funding category was started originally in conjunction with the Alcohol Safety Action Program operated by the National Highway Traffic Safety Administration (Fridlund 1977; Kisko 1976; U.S. Department of Transportation 1979*b*).

In 1978, NIAAA's 18 funded specialized problem-drinking driver programs served 15,798 persons. Persons becoming involved with treatment as a result of an arrest for driving following the use of alcohol (DWI) were seen within all program categories—28 percent of all intakes were DWI related (Ferguson and Kirk 1979). More DWI clients (14,344) were seen at non-drinking-driver programs. The modal person seen by a drinking-driver program was male (86 percent), aged 36, white (71 percent), divorced or separated (52 percent); had attended high school (10.9 mean school years); was employed (88 percent) as a craftsman (35 percent); and had an annual household income of $10,359. He or she was most often referred by the courts for the DWI offense (49 percent) and was frequently referred to AA during treatment (65 percent). He or she was consuming the equivalent of 2.9 ounces of alcohol per day at intake and had been drinking heavily for 10.6 years. This was his or her first referral for formal treatment (73 percent). He or she was more likely to receive outpatient (95 percent) than inpatient services (5 percent). Outpatient services were most likely to be in group treatment.

Followup data obtained 180 days after intake for a smaller sample showed positive changes—decreased days of drinking, decrease in alcohol used per day, decreased behavioral and physical impairment, and decreased use of hospitals. Abstinence increased from 8 percent to 46 percent. Employment increased only slightly (from 83 percent to 87 percent) because so many were already working, but days worked and average monthly income increased.

A trend to look for subgroups of drinkers has been seen in the problem-drinking-driver programs. Arrestees have been divided into two groups: (a) problem drinkers who have lost control of their drinking and suffer severe social, physical, and psychological consequences and (b) social drinkers who drink occasionally and have suffered no undue consequences prior to their arrest for driving after drinking (U.S. Department of Transportation 1979*b*). Similarly, drinking-driver treatment programs have now been differentiated. A didactic, lecture-oriented component is given to social drinkers, for whom information, discussion, and threat of future punishment have been found effective in preventing further arrests. A treatment component is provided to problem drinkers for whom more intensive education, counseling, and other therapies are needed if behavior is to change (Scoles and Fine 1977; Timken 1979: U.S. Department of Transportation 1979*a,b*). The treatment component continues to include didactic information presentations but these are smaller interactive discussion groups rather than large lectures.

The most elaborate patient classification system yet proposed for differential treatment planning includes seven subtypes (Steer et al. 1979). Using four indexes of alcohol impairment, including two derived from NIAAA's data system, the researchers cluster analyzed records for a pool of 1,500 male DWI arrestees. Clinical experience and knowledge of the literature led to suggested treatment regimens for each type. The types vary in severity, and the intensity of the intervention varies concomitantly from license restrictions plus instruction in safe driving to license revocation plus court-mandated hospitalization for forced withdrawal followed by probationary supervision and medication.

Treating the Incarcerated Alcoholic

There has been little progress in the development of alcoholism treatment programs for inmates of correctional facilities over the last 10 years. A recent Government Accounting Office (GAO) report criticized the level of treatment presently available to inmates with acute and chronic alcohol problems in all settings within the institutional corrections system (jails, Federal and State prisons). Estimates of adult inmates with histories of severe alcohol problems ranged from 6 percent to 42 percent; estimates of those inmates with alcohol and/or other drug problems ranged from 40 percent to 80 percent (Comptroller General 1979). At the end of 1978, over 300,000 persons were being held in Federal and State correctional institutions across the Nation; over 95 percent are male, and minorities are disproportionately represented. Conservatively estimated, 18,000 of these inmates are in need of alcoholism treatment; a more realistic estimate of those in need would be 25 percent, or 75,000.

The GAO report, however, found that, at the Federal level, the Bureau of Prisons has concentrated on treating drug abusers rather than alcohol abusers, with only 5 of its 38 institutions having alcohol abuse units as of March 1978. At the State level, the GAO found little systematic identification and treatment of alcoholics. The report was also critical of the efforts of Federal agencies in implementing legislative mandates to improve treatment for alcoholic inmates held in the State prisons. In 1978, NIAAA funded seven criminal justice projects which served 2,380 persons (Ferguson and Kirk 1979); only three of the seven projects concentrated on treating incarcerated alcoholics. AA is frequently the only help available in State prisons.

Treatment approaches used in correctional settings have varied considerably, including chemotherapy, biofeedback, behavioral management techniques, therapeutic communities, education and discussion groups, confrontation groups, and self-help groups. Treatment has been conducted in separate specialized units—a cell block or dormitory where the inmates are isolated to varying degrees from the larger institution while in treatment as well as in separate facilities operated by the corrections department as a treatment program. Most alcoholism treatment is conducted with clients' continuing to reside in the general inmate population. They participate in the full range of institutional activities and attend separately scheduled individual group treatment sessions (Smith 1977).

Alcoholism treatment is conducted either by specialized corrections staff, volunteers coming in on an irregular or regular basis, or community-based agencies contracted to provide treatment to inmates on a regular basis. It is this latter strategy which the GAO report recommends for increasing treatment availability in State and Federal prisons (Comptroller General 1979). Treatment personnel coming into the prison from the outside must be aware of prison cultures, both administrative and inmate, in order not to be caught in the conflict between treatment and custody (Nissen 1973; Smith 1977). Open communication and cooperation with custodial and administrative staff are necessary if the program is to succeed.

Treating the Physically Impaired Alcoholic

In the last several years, there has been increasing recognition that the physically impaired is a neglected special population with several subpopulations. Despite such recognition, however, current treatment programing is not responsive to the unique needs of these groups. Physically disabled alcoholics face a double stigma—the physical disability and the alcoholism. Yet, they are forced to fit into treatment programs designed for the physically normal which are not responsive to their needs. Barriers to

treatment such as physical accessibility, special transportation needs, and counselor attitudes are now beginning to be identified and dealt with. Changes required to create a responsive environment go beyond building a wheelchair ramp. Program content, staff attitudes, and manner of presentation must be reexamined and modified (Boros 1979; Watson et al. 1979).

Boros (1979) advocated using Lewin's action research techniques to bring about community services for the physically impaired alcoholic; his own work has focused on the deaf. His strategy can be generalized to other disability groups. It is based on four assumptions: (1) treatment personnel require valid and comprehensive information about the need for new services to physically disabled clients, (2) treatment personnel will cooperate with the action research effort, (3) treatment personnel will accept outside help in working with physically disabled clients, and (4) treatment personnel will reallocate their resources to improve programing for physically disabled alcoholics when the data generated by the research and their own experience convince them of the need.

Variations of the action research method can be used by individual alcoholism treatment agencies in developing more responsive strategies for working with physically disabled alcoholics. Increasing attention will be paid to their proportionate representation in treatment with the active implementation of sections 503 and 504 of the Rehabilitation Act of 1973.

Treating the Alcoholic Migrant Worker

A high-risk occupational group for which intensive alcoholism treatment services are needed but are only now being developed is the migrant and seasonal farm workers (Chatham 1977). In 1978, there were two NIAAA-funded treatment projects for migrant workers. Additional migrant workers were served in funded projects in Florida, Texas, and California, where many of the migrant workers are concentrated. NIAAA project directors from a number of these States recently met to discuss how they could coordinate efforts for those clients who move within the emigrant streams from one State to another.

The President's Commission on Mental Health – Panel on Migrant and Seasonal Farmworkers Mental Health Problems sent a survey questionnaire to 96 Migrant Health Projects. Sixty percent of the responding project directors indicated alcoholism was the most significant mental health problem among this population. (Among many of the other mental health problems cited in the survey, such as marital and family problems, alcoholism is frequently found to be a major factor.)

A study of nine migrant health centers was completed by the Consad Research Corporation to determine the "Prevalence of Mental Health Conditions Among Users of Migrant Health Centers." The report states that the prevalence of all mental health conditions among migrant users is 5.453 per 100. The prevalence of alcohol problems across all ages and categories is .947/100 users. Alcohol problems account for about 17 percent of the mental health conditions prevalent in migrants. Approximately 36 percent of all males and 8 percent of all females with mental health problems had an alcohol problem.

Traditional alcoholism agencies are not geared to work with the impoverished, culturally isolated migrant farm worker. Specialized migrant health agencies focus on the more acute health needs of this impoverished population and do not yet have staff training in alcoholism counseling. Efforts are currently being made to develop new linkages that will bring the migrant health agencies and alcoholism treatment programs together, to develop common strategies for reaching out to the alcoholic migrant workers and motivating them to seek continued, rather than emergency, treatment such as detoxification or repair of alcohol-related trauma injuries.

Cultural Factors in Treatment

In considering cultural factors in treatment, several common problems must be identified. First, clinicians must be wary of defining a given client only in terms of his or her special population status; members of these groups vary on other important dimensions such as social status, education, and psychiatric status. In his critique of the literature on black alcoholism, Harper (1979) noted the limitations of available studies on alcohol use among blacks because of the focus on drinking practices of lower class black male Americans. Generalizations about treatment needs for all blacks from this subgroup are inappropriate, and there will be individualized reactions to treatment within the black special population; the result will be differential outcomes (Linn et al. 1979).

Second, cultural sensitivity and flexibility are necessary when the therapist and the client are from different cultures. However, arguments about the appropriate interpretation of cultural factors in relation to alcoholism are common (Leland 1979; Popham 1979). In order to avoid such conflicts, clinicians may need to make room for the "native healing system" of the client's culture in the treatment process (Miller 1978; Watson et al. 1979).

Third, an important factor involved in underutilization of treatment facilities by special population groups is the lack of means to pay for treatment. For example, in a sample of people calling a referral service in New York City, Fischer (1978) reported that blacks and Hispanics were less likely to have insurance coverage for alcoholism treatment. This lack of coverage influenced the nature of the referral made. In planning for new or modified culturally appropriate programs, the inability of minorities and other special populations to rely on third-party payment must be taken into consideration (Newman et al. 1978).

Fourth, additional studies on how to make treatment programs more relevant are needed. Wanberg et al.'s study (1978), which compared alcohol use patterns in American Indian, black, Hispanic, and white groups treated within a single State hospital treatment program, is illustrative of the kind of research necessary. These researchers were able to develop some recommendations for the specialized treatment approaches which may be appropriate for each of these special populations as they participate in the larger program. They found important differences on both sociodemographic and drinking pattern variables. All four groups reflected significant social disruption, but American Indian and Hispanic alcoholics were more likely to manifest greater disruption in vocational and economic areas, suggesting the need for greater referral to assistance services for these two groups, or for specialized, culturally sensitive assistance programs within the overall program.

The instrument used to measure drinking patterns was the alcohol use inventory (AUI), which comprises 22 scales measuring alcohol use benefits, styles, affective associations, and symptoms. Significant differences among the four groups were found for several scales measuring drinking style; no differences were found for drinking benefits, affective associations, or symptoms. American Indians and Hispanics were found to have a greater tendency than whites to drink in gregarious, convivial settings such as at bars and in peer groups. This finding suggested that nontraditional group therapy experiences led by peer counselors may be more effective with Indians and Hispanics. The findings of no differences among the four ethnic groups on other AUI scales suggest that common treatment approaches can be used in dealing with the "perceived benefits" derived from using alcohol.

Wanberg et al. concluded that a program's staff can include specialists who are trained in the cultural background of the various special populations that can be expected to enter the program, and who can act in an advocacy role for all clients as treatment plans are developed to allow them to receive the alcoholism treatment, social services, and vocational training appropriate to their cultural needs and drinking patterns.

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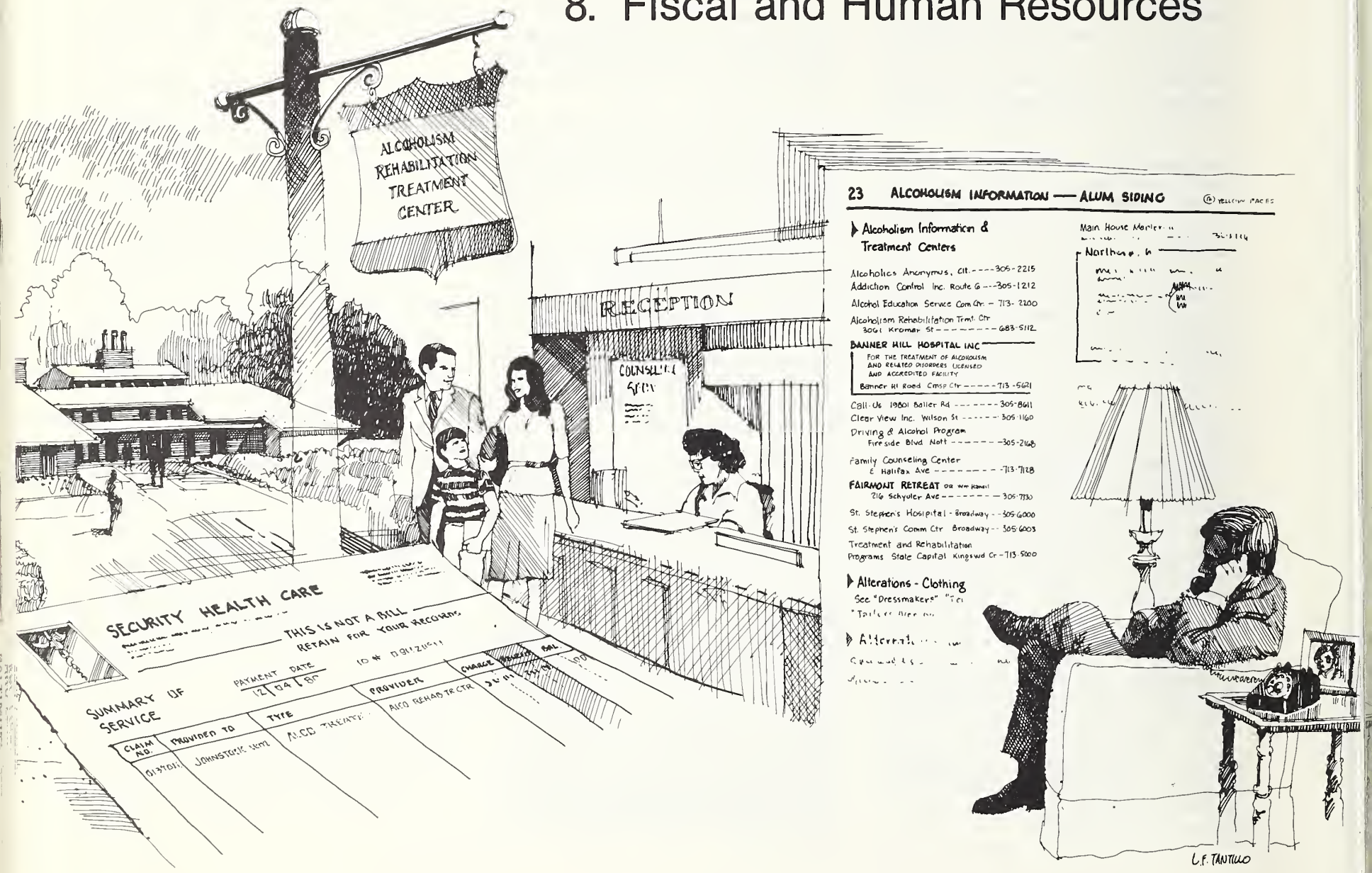
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8. Fiscal and Human Resources



This chapter discusses the financial and human resources that have been mustered to combat the consequences of alcohol abuse and alcoholism in the United States. Programs designated for the prevention of, intervention with, and treatment of alcohol abuse and alcoholism require major financial and other resource commitments to create, develop, and sustain successful efforts. In addition, the manpower to operate such programs must be educated with regard to the identification of problem drinking and the skills to prevent, intervene, or treat and rehabilitate its victims. The major programs outlined in the fiscal and human resources areas come from both the public and private sectors of American society. The manpower elements recognized as central to amelioration of problem drinking include not only medical personnel such as medical doctors, nurse practitioners, and psychiatrists, but also psychologists, social workers, and alcoholism counselors. This mixture of money, people, and training is described in terms of concrete programs and future directions.

Financial Resources

During the past decade, increased attention and activity has centered on how best to finance treatment services to meet the needs of alcoholic persons and their families. A great deal of this activity has focused on the removal of historical limitations to financing treatment of alcoholic persons, and expanding the nature and scope of insurance coverage. The American Hospital Association estimates that approximately one-half of all occupied beds in the United States were filled by people with ailments linked to the consumption of alcohol (National Institute on Alcohol Abuse and Alcoholism 1978*a*).

Financing of Alcoholism Treatment

The sources and amounts of revenue received by alcoholism treatment units nationwide were reported for 1979. Funds reported by all treatment units, both public and private, are documented in table 1.

Funding sources reported by NIAAA grantees in 1979 include only those projects receiving such Federal support. The pattern of their funding is shown in figure 1.

Table 1 presents the total annual funding by source for the 4,073 alcoholism treatment units which reported funding data to the 1979 National Drug and Alcohol Treatment Utilization Survey (NDATUS). Of the total $795 million reported, third-party funding sources accounted for 32.1 percent ($255 million), the States 25.5 percent ($203 million), and Federal sources other than NIAAA 12.4 percent ($99 million). Local funding accounted for another 9.3 percent ($74 million), and client fees contributed 9.1 percent ($72 million). Reported NIAAA funding added 7.3 percent to the total ($58 million). Since the units reported a smaller amount for NIAAA formula funds ($14.5 million) than was indicated by other available data, formula funds reported through the NDATUS may have been understated.

While third-party sources contributed the largest amount of funding, State funding and client fees were used to support more units. (Third-party funding helped support 1,692 units, while State funding sources contributed to 2,356 units and client fees to 2,043 units.) Other Federal, the third largest funding source, supported 860 units, while local funds, representing 9.3 percent of all funding, were directed to 1,457 units.

Private insurance carriers contributed the most funding per unit, providing an average of $204,130 to each unit reimbursed. Public insurance accounted for an average of $112,400 for each unit supported, while State funds contributed an average of $86,080 per unit. Welfare funds accounted for the lowest average expenditure per unit ($26,420).

TABLE 1

Funding Sources and Amount of Funding for All Alcoholism Treatment Units

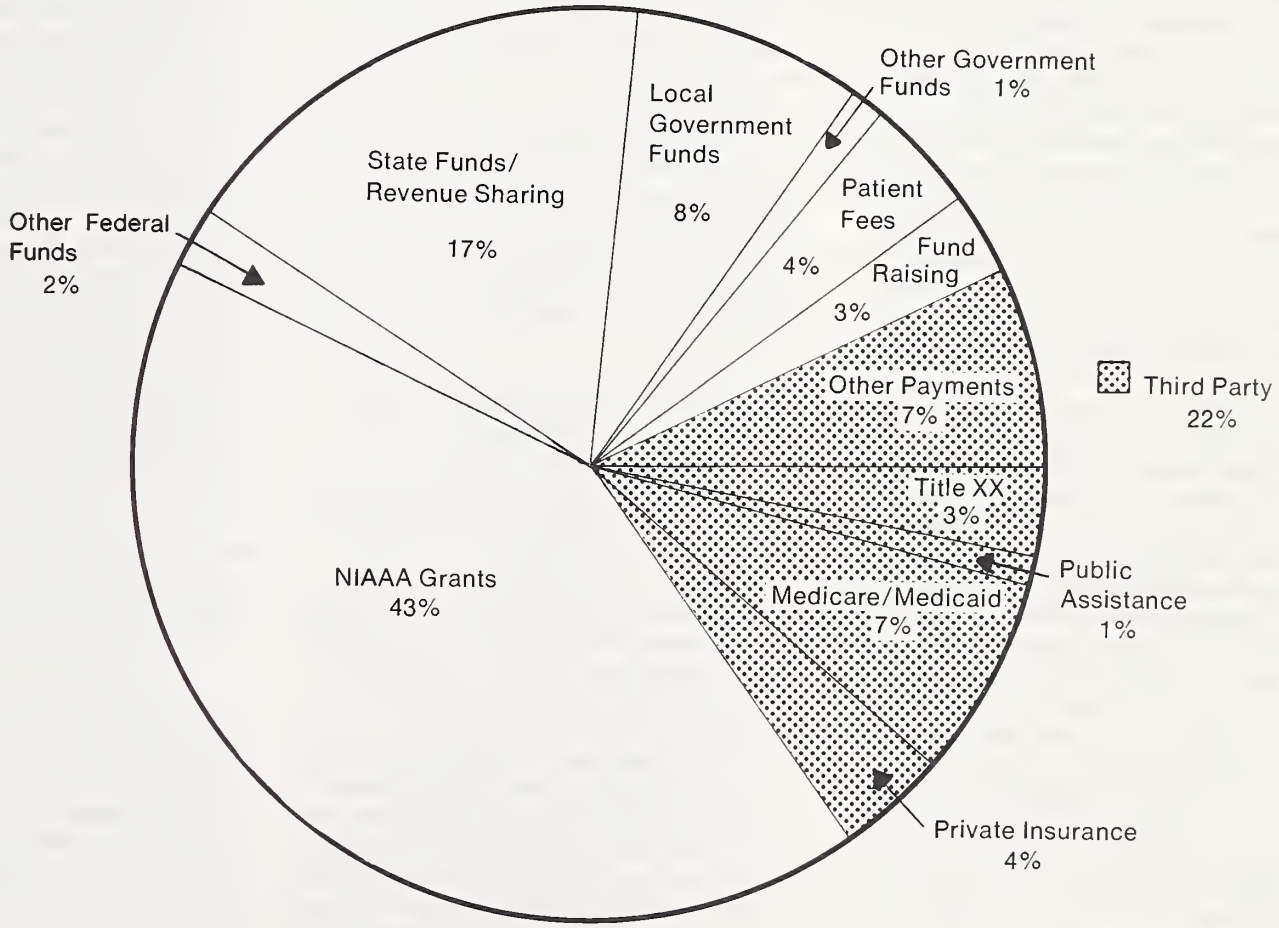
Funding Source	Annual Funding (Dollars in Thousands)	Percentage of all Funding	Number of Units Supported [1]	Average Funding Per unit (Dollars in Thousands)
NIAAA				
Formula Funds	14,503 (36,007)[2]	1.8	473	30.7
Other Funds	43,532 (48,128)[2]	5.5	586	74.3
Total	58,035 (84,135)[2]	7.3	997	58.2
Other Federal[3]	99,045	12.4	860	115.2
Third-Party Public Insurance	61,171	7.7	544	112.4
Private Insurance	143,302	18.0	702	204.1
Welfare	13,315	1.7	504	26.4
Title XX	24,868	3.1	562	44.3
State and Local Reimbursements	12,423	1.6	209	59.4
Total	255,079	32.1	1,692	150.8
Client Fees	79,136	9.1	2,043	38.7
Private	34,139	4.3	872	39.2
State	202,816	25.5	2,356	86.1
Local	73,933	9.3	1,457	50.7
Total Reported Funding	795,183	100.0		

SOURCE: National Drug and Alcoholism Treatment Utilization Survey (1979).

1. Units that receive funds from more than one source are counted for each source.
2. These data are reported through the State Alcoholism Profile Information System (SAPIS). They differ in part because they more accurately record original funding source, whereas NDATUS data are gathered from treatment units with less precision of origin.
3. Includes sources such as the National Institute on Drug Abuse, Bureau of Prisons, Veterans Administration, Drug Enforcement Administration, Bureau of Community Health Services, Law Enforcement Assistance Administration, and National Institute of Mental Health.

FIGURE 1

Revenues and Sources for NIAAA-Funded Grantees (1979)



TOTAL RECEIPTS $73,747,399

SOURCE: National Alcoholism Program Information System (1979).

The Public Sector

Federal, State, county, and local governments are all involved in the provision of treatment services for alcoholic persons and hence are intimately concerned with the development of fiscal resources. Many of the direct service programs are coordinated with the health service network. Other governmental programs reimburse for services or treat special populations, while others provide cash assistance to indigent and disabled persons, including a number of alcoholic persons. In 1979 alone, at least 12 Federal agencies sponsored programs or projects that dealt with alcohol as a factor in health and social problems. It is estimated that these programs expended over $280 million (National Drug and Alcohol Treatment Utilization Survey 1979) through grants and contracts, intramural programs, third-party financing, military programs, in-house program administration, and Federal Employees Assistance Programs. Federal projects devoted solely to the direct treatment of alcohol abuse amounted to approximately $180 million in 1979 (National Drug and Alcohol Treatment Utilization Survey 1979). To a large extent, these programs that rely substantially on direct public funds—recipients of formula and categorical grants, for example—treat people whose illness has progressed to an advanced phase, whose recovery may be complicated by a prior illness, or who have no other sources for the payment of services. The major responsibility for this support, at the Federal level, rests with the National Institute on Alcohol Abuse and Alcoholism (NIAAA) which was created by Congress in 1971 and which expended approximately $50 million on direct treatment projects in 1979.

Direct State and Local Government Funding

Of the nearly $800 million spent in 1979 for alcohol abuse and alcoholism treatment services by Federal, State, local, and private sources, more than one-third was derived directly from State and local sources (National Drug and Alcohol Treatment Utilization Survey 1979).

In the decade since enactment of the Federal legislation on alcoholism and formal designation of the State Alcoholism Authorities, funding sources for State and local programs have grown so that what once seemed like a very large Federal investment in the early 1970s is now joined by funds from many other sources. In fiscal year 1979, NIAAA direct project grant funds represented approximately 7 percent of the total funding for treatment services in alcoholism (National Drug and Alcohol Treatment Utilization Survey 1979). As a result of the new roles for State and local government programs on alcoholism which grew out of the Federal legislation, other funding sources were added. These include Federal-State title XX programs, other social services provided by State and local governments, State and local tax revenues, public and private insurance coverage, and Federal sources such as Medicare, Supplemental Security Income, and food stamps.

Yet the largest single source of public funding for all alcoholism services is derived from taxes raised by the States themselves. According to the National Drug and Alcoholism Treatment Utilization Survey (1979), these funds totaled about $203 million in fiscal year 1979, and comprised 25.5 percent of the total funds available from Federal, State, and local sources in that year for all alcoholism services, including treatment. Local revenues for alcoholism programs from funding sources such as city and county governments contributed roughly $74 million for alcoholism services in fiscal year 1979, or about 9 percent of the available Federal, State, and local dollars.

The principal sources of State funds are those appropriated from general State revenues. These are allocated both directly to the State Alcoholism Authority for support of statewide service systems, and to other departments of government for alcohol programs, such as education, highway safety, and services in the criminal justice system.

To enhance funding for alcoholism services at the State and local levels, many State legislatures have enacted additional taxes on the sale of alcohol, a portion of which is specifically earmarked for support of alcoholism services. By January 1978, 18 States had adopted some form of the tax (Akins and Williams in press).

Many States, as regulators of insurance coverage within the States, have, by either regulation or legislation, required that treatment for alcoholism be reimbursed by insurers. By 1980, a total of 25 States had enacted some form of insurance requirement, ranging from mandatory coverage of alcoholism on an equal basis with other health care problems to a required option for coverage if desired by a policyholder (Cooper 1979). Although no standard benefits package exists, typical benefits range from individual to group coverage, hospital to outpatient care, and infrequently to rehabilitative services as well. In this regard, in 1980 the National Association of Insurance Commissioners established a task force to examine the issues surrounding mandated alcoholism treatment benefits. It is scheduled to report its recommendations to the full Association in mid-1981.

As mentioned earlier, public and private insurers contributed $204 million to treatment in 1979, or about 26 percent of the funds available (see table 1). Experience to date suggests that insurance coverage is likely to be an increasingly important source of funding for services in the 1980s. The long-term economics, however, will depend on whether the insurers themselves revise reimbursement policies to recognize non-hospital-based alcoholism service providers as eligible for reimbursement and whether demand for alcoholism coverage increases over what it has been in the past.

The State role in the area of services generally involves allocating resources from a variety of funding sources to local programs which have the major responsibility for providing services. These funding sources include State revenues and formula grant and incentive grant funds. Few States operate alcoholism treatment programs directly. The State role does not include funding or management decisions regarding programs directly supported by NIAAA beyond comments on funding applications, although State and local funds are often apportioned to NIAAA's programs to supplement or enhance their service activities. The exceptions to this rule are the five States which are currently participating in the NIAAA/State Alcoholism Services Development Program, giving them planning and management control over all NIAAA treatment funds in their States.

By congressional direction the Federal funding formula is based on a State's population, per capita income, and need for alcoholism services. In general the States have not adopted funding formulas similar to the Federal formula grant for allocation of their own resources within the communities. Most States have developed criteria based on the need for services and the availability and cost of resources. In recent years, since enactment of the National Health Planning and Resources Development Act, these decisions have been arrived at in conjunction with criteria for funding health services developed by the Health Systems Agencies (HSAs).

Federally Funded Insurance Programs

Health insurance programs are provided by law under Federal and/or State auspices and are financed through taxes. Benefits, fixed by law, are available to those who qualify under the given plan. These publicly supported programs are Medicare, Medicaid, CHAMPUS (Civilian Health and Medical Programs for the Uniformed Services), and the Federal Employees Health Benefit Plan.

Medicare.

Medicare is administered by the Health Care Financing Administration (HCFA) within the Department of Health and Human Services. It was authorized by title XVIII of the Social Security Act. It provides hospital and medical insurance protection for individuals aged 65 or older, people under age 65 who have been receiving cash benefits under the social security or railroad retirement programs because they are disabled, and certain chronic kidney disease patients under age 65. In a 1978 NIAAA report analyzing the adequacy of current Medicare coverage for alcohol problems, it was estimated that approximately 10 percent of alcoholics were elderly and that 85 percent of these were not receiving any type of service related to their alcohol problems (National Institute on Alcohol Abuse and Alcoholism 1978*b*).

Medicare categorizes alcoholism as a mental disorder and thus it falls within psychiatric coverage, which is less than that available for physical illness. Part A, inpatient care, is limited to 190 lifetime days. Part B is somewhat complex in its reimbursement formula, but generally imposes substantial coinsurance requirements and annual maximum payments for outpatient mental health (including alcohol services).

HCFA, in fiscal year 1979, estimated that the Medicare program paid about $100 million for the treatment of alcohol-based disorders and alcoholism. Of this total, about $90 million was for institutional care, and the remainder was an estimate of the amount paid to physicians for their services (U.S. Department of Health and Human Services 1980). HCFA is initiating a national demonstration to test the feasibility of providing alcoholism activities in less costly and nontraditional settings, e.g., freestanding inpatient and outpatient centers.

Medicaid.

The Medicaid program (title XIX of the Social Security Act), which all States except Arizona have enacted, provides medical assistance to low-income individuals. All persons in the Aid to Families with Dependent Children (AFDC) program, as well as aged, blind, and disabled persons receiving Supplemental Security Income (SSI) are eligible unless their State has more restrictive standards. Treatment costs are shared by the States and the Federal Government and each State, according to Federal statute, must provide certain basic health services. Expansion of these basic benefits is up to each State's discretion. A major limitation under the Medicaid program is the exclusion of Federal financial participation for care in psychiatric institutions for persons between the ages of 22 and 64. Also, because services for alcohol problems are not specifically mentioned in the Medicaid statutes, the States determine whether treatment should be excluded or included.

A 1978 study contracted by the Department of Health, Education, and Welfare found that the overwhelming majority of Medicaid State plans are silent on the issue of coverage for alcoholism treatment services (Booz-Allen & Hamilton 1978).

CHAMPUS and CHAMP-VA.

The Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), administered by the U.S. Department of Defense, operates as a health insurance program, except that beneficiaries do not pay premiums. CHAMPUS pays 75 percent of hospitalization costs and enrollees pay 25 percent. Private insurers process and pay claims. Enrollees—of whom there are 6 to 8 million—are dependents of active-duty military personnel, retired military personnel and their dependents, and dependents of deceased active-duty and retired personnel. CHAMPUS enrollees must also get hospital care whenever possible from Uniformed Services medical facilities; these include all U.S. Public Health Service hospitals.

Available benefits under CHAMPUS that relate to alcohol problems are brief hospital care for detoxification, inpatient rehabilitative care, and outpatient psychiatric care. The inpatient rehabilitative care beyond detoxification is limited to a lifetime maximum of three admissions. Halfway houses and many counseling services are ineligible because of a CHAMPUS emphasis on the traditional medical modalities and reliance on Joint Commission on Accreditation of Hospitals (JCAH) standards. Meetings of CHAMPUS, NIAAA, and other health care organizations and societies have taken place to consider the expansion of coverage for alcoholism services to increased use of outpatient care and broader use of nonhospital settings for residents' care. Policy revisions are currently under consideration.

Total CHAMPUS costs for alcoholism and alcohol abuse were determined for calendar year 1978, which includes a portion of fiscal year 1979. There were 10,046 claims and expenditures of $5.5 million (U.S. Department of Health and Human Services 1980).

A similar program, called CHAMP-VA (the Civilian Health and Medical Program of the Veterans Administration), is available to dependents and survivors of some disabled veterans.

Federal Employees' Health Benefit Plan.

The Federal Government offers over 50 health insurance plans to its employees. Most of these plans include some benefits for alcoholism and drug abuse or addiction, although the extent of the coverage varies widely. Some plans have a specific alcoholism benefit, but most alcoholism treatment is subsumed under mental health benefits or other benefit categories. The Office of Personnel Management is the agency responsible for negotiating the health insurance coverage for government employees. This program, unlike CHAMPUS, is an insurance program with beneficiaries paying premiums in addition to the Federal contribution.

In a major recent development the Federal Blue Cross/Blue Shield program expanded its coverage to include two lifetime 28-day inpatient stays in freestanding facilities.

Aetna Life and Casualty Co. and NIAAA are currently engaged in a joint project, funded by the Office of Personnel Management, to provide systematic cost and utilization data with regard to a new expanded Aetna alcoholism benefit for approximately 300,000 Federal employees. The preliminary data seem to indicate some cost savings through the utilization of less traditional outpatient alcohol services than the benefit package provides. Also, a subcommittee of the National Advisory Council on Alcohol Abuse and Alcoholism studied the possibility for expansion of such coverage.

Public Financial Assistance Programs

Unlike insurance programs that pay specifically for health services rendered, public financial assistance programs provide cash to those people who meet the eligibility criteria. Some of these are alcoholic persons and the financial assistance can aid in the provision of treatment services.

Title XVI.

Under title XVI of the 1973 Amendments to the Social Security Act, Supplemental Security Income (SSI) cash assistance is granted by the Federal Government to those eligible for Aid to Families with Dependent Children, to the blind, to persons who are otherwise disabled, and to needy persons over the age of 65. Alcoholic persons have been defined as disabled under the provisions of this program; but payments to disabled alcoholics are permitted only on the condition that they undergo treatment, if such is available. The present social security law also requires an alcoholic SSI recipient to designate a third party to receive his or her supplementary income.

The monitoring and treatment referral provisions of the law are jointly administered by the U.S. Department of Health and Human Services (HHS) and the States. In most States vocational rehabilitation agencies have arrangements with the Rehabilitation Services Administration to carry out program responsibilities. Although no specifically authorized funds exist to pay for treatment, HHS may reimburse agencies for their administrative costs of referring alcoholics for treatment and monitoring this treatment. In fiscal year 1979 an estimated $515,000 was spent on such activities (U.S. Department of Health and Human Services 1980).

Additionally, this statute mandates that HCFA carry out a series of demonstration projects aimed at testing feasibility of early intervention to help prevent disability and thus avoid SSI payments altogether. A 1979 report analyzing title XVI, by the Office of the Inspector General within HEW, found "that the State disability determination units were not identifying all SSI beneficiaries who were alcoholics or drug addicts" (U.S. Department of Health, Education, and Welfare 1979).

Statistical data on alcoholics and drug addicts for December 1978 indicated that there were 2,341 disabled persons medically determined to be alcoholics

who were receiving federally administered payments. An estimated $5.5 million was expended during fiscal year 1979 for payments related to alcoholic persons (U.S. Department of Health and Human Services 1980).

Title XX.

Title XX, a 1975 amendment to the Social Security Act, is a Federal/State partnership for social services, under which States are given broad authority to define social services and who may receive them (within specific Federal guidelines). Each State has a ceiling on the amount of Federal financial support for title XX which is established annually. The required annual State comprehensive plans may include alcoholism treatment services if they are defined explicitly. Several federally imposed requirements cover room and board reimbursements, administrative requirements, and provider standards.

An NIAAA study, encompassing the period of June 1977 through June 1978, assessed the role that title XX plays in the rehabilitation of alcoholic persons in need. This survey focused on the need for the alcohol community to become involved in statewide planning and explained that a number of barriers existed that make this difficult.

The most recent data on actual expenditures under title XX are for fiscal year 1978 for which the States reported total expenditures of $14.6 million for special services for alcohol and drug abuse. This amount includes Federal, State, local, and donated funds. During fiscal year 1978, the number of primary recipients for special services for drug and alcohol abuse averaged 22,586 for a 3-month period (U.S. Department of Health and Human Services 1980).

Disability Insurance.

Public disability programs involving workmen's compensation are available in all 50 States. Temporary disability insurance programs are offered by Rhode Island, California, New Jersey, New York, and Hawaii. Compensation is limited by 27 States if alcoholism or problem drinking is the cause of injury resulting in a claim. The number of these cases is not known, however, because the disability compensation is for the injury rather than for the contributing condition.

Food Stamp Program.

The Food Stamp Program is administered by the Food and Nutrition Service of the U.S. Department of Agriculture. Under provisions of the Food Stamp Act of 1977, food stamps may be provided to residents of private, nonprofit institutions that conduct treatment programs for drug addicts or alcoholics. The institutions may apply on behalf of each person in treatment and spend the coupon allotment for food prepared by and/or served to the alcoholic person.

Based on information from the last 6 months of 1979, food stamp expenditures for alcohol and drug programs were about $2.5 million for fiscal year 1979 (U.S. Department of Health and Human Services 1980). These figures relate to food stamps redeemed through wholesalers and do not include those that centers may have used to purchase food from retail food stores on behalf of alcoholics.

Federally Funded Program Efforts

Actions of the Federal Government include expending some portion of their moneys for the delivery of treatment services within their programmatic context either through the awarding of grants or contracts to establish treatment facilities; directly through the actual delivery of services themselves; or through occupational programs for their employees.

National Institute on Alcohol Abuse and Alcoholism (NIAAA).

Since its inception in 1970, the National Institute on Alcohol Abuse and Alcoholism has been developing alcoholism treatment capacity by funding service projects directly; making Federal formula grants to States; funding and carrying out special financing demonstration and research projects; encouraging greater awareness of alcoholism problems in occupational settings and third-party reimbursers; and since 1974 providing incentive grants to the States to encourage the adoption of the Uniform Alcoholism Treatment and Intoxication Act. This pluralistic approach toward the promotion of financial resources continues, with NIAAA working with both other public sector programs and private concerns.

In the mid-1970s project grants were designed with the Federal Government funding to decrease as local funds and third-party reimbursement increased. Unfortunately, these expectations in all cases were not fulfilled. A significant portion of the deficit resulted from factors largely beyond the control of grantees. Many alcoholism programs were excluded categorically from participation in some reimbursement programs. Whereas most traditional health care delivery organizations served clients who had wide access to traditional payment programs, grantee alcoholism programs served many disenfranchised clients. Few grantee clients had employment-related health insurance. The plans of those who did have insurance frequently did not cover alcoholism treatment beyond detoxification. Traditional payment plans were designed for the express purpose of paying for traditional medical services. By definition, the grantee programs provided nontraditional services. As a result of these and other factors, their clients were often excluded from reimbursement by major insurance payers.

Another major effort to support the direct Federal financing role was taken in March 1979 when NIAAA began the State Alcoholism Services Development Program. It is designed to demonstrate that systematic planning among State and local government jurisdictions, communities, service providers, and consumers can result in more responsive and efficient service systems, and eventually decrease the reliance on Federal funds. Under this project, five States have been given the responsibility for managing all NIAAA treatment grant moneys for projects that wish to participate.

Other efforts to provide leadership in the area of financing of alcoholism services in NIAAA have included the development of model cost accounting manuals, the development and testing of a model alcohol benefit package, the development of treatment standards with the Joint Commission on Accreditation of Hospitals, a Health Insurance Resource Kit describing the experience of individual carriers, employers, and government, and a number of health insurance coverage studies.

Recognizing the need for greater financial access to alcoholism services while also appreciating the necessity for adequate information on the impact of various delivery and finance mechanisms vis a vis utilization, cost, and delivery of alcoholism services from which to guide service programs, NIAAA has continued to engage in a number of activities and studies during the fiscal years since the *Third Special Report on Alcohol and Health*.

To highlight this need, in May 1979, the Department of Health, Education, and Welfare announced a major initiative to combat alcoholism and alcohol abuse, through studying and encouraging the expansion of public and private health insurance coverage for alcoholism. This new NIAAA health insurance initiative builds on the Institute's earlier efforts but significantly extends into new areas, including cost and utilization studies, technical assistance materials, evaluation of State-mandated legislation for health insurance, position papers on the inclusion of alcoholism in national health insurance, and cost-simulation studies. Some previous and new initiative activities of note include the following:

–In 1974, the State of California implemented a pilot project to provide alcoholism insurance benefits to its 158,000 State employees or more than 300,000 persons including family members. Data on the first 3 years of this program showed that 516 persons used the benefit during the third year. There was a significant decline in inpatient admissions for detoxification and rehabilitation after the first year to an average rate of 1.1 admissions per 1,000 enrolled families and individuals in the third year. More than 80 percent of persons treated on an inpatient basis did not have a repeated hospital stay for alcoholism during the third year. Significantly, the data showed that for every dollar expended to provide alcohol services to State employees, an estimated 42 cents was saved due to a decrease in demand for non-alcohol-related health services. There also was a significant reduction in costly alcoholism inpatient care by outpatient services (Hallan and Holder 1978).

–NIAAA has encouraged Blue Cross plans to extend their coverage and has been working closely with the Blue Cross/Blue Shield Associations in this regard. NIAAA has joined a demonstration project that the Blue Cross Association has been carrying out with the National Institute on Drug

Abuse, which will test the feasibility of offering expanded alcohol benefits to their subscribers in Birmingham, Ala.; Philadelphia, Pa.; and a third yet-unnamed site.

–Preliminary actuarial estimates of the costs for various alcoholism benefit packages under national health insurance have been completed under a contract funded by NIAAA and are currently under review within NIAAA.

–The Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) has released an analysis of selected studies on the cost of alcoholism services that suggest that alcohol treatment does result in a subsequent reduction in medical care utilization and costs, and particularly in employee-based alcoholism programs and organized health care settings. The studies found that alcohol treatment was followed by reductions ranging from 26 percent to 69 percent in either medical utilization or surrogate measures of utilization such as reduction in sick days or reductions in sickness and accident benefits paid (Jones and Vischi 1979).

–In 1978, the Office of the Secretary of Health, Education, and Welfare sponsored the Alcoholism Funding Study to evaluate sources of funds and barriers to funding alcoholism treatment programs. The study found that while non-NIAAA financial resources are available in all States, the funding of any particular NIAAA special project by a non-NIAAA source is unpredictable. Such funding is determined by very specific factors, but these factors may not have the same effect on similar projects. Some of these factors are: type of grantee agency (e.g., hospital, community mental health center, or public agency); quality of program; level of integration into treatment network; quality of project director; availability of State Alcoholism Authority resources; and State policy.

–NIAAA initiated and hosted a National Working Conference on Health Insurance Coverage for alcoholism treatment services in Washington, D.C., in October 1980. There were participants from Federal and State Governments, Blue Cross/Blue Shield plans, private insurance companies, occupational alcoholism programs, and alcohol treatment programs, providing a forum for exchange of ideas. The papers presented will be included in a research monograph.

Veterans Administration.

The Veterans Administration (VA) is the largest provider of direct treatment services. The Alcohol Dependence Treatment Programs (ADTPs) of the VA are part of the agency's Specialized Medical Service, which is designed to meet the needs of veterans for psychiatric care, rehabilitation, drug and alcohol dependence, and readjustment. The VA sponsored 100 of these centers in fiscal year 1979. A total of 97,826 patients were treated for alcoholism as inpatients, over 50 percent of whom received care in ADTPs. The remainder were treated for alcoholism in VA medical hospitals (U.S. Department of Health and Human Services 1980).

The major recent treatment initiative of the VA relates to the provisions of Public Law 94-581, which authorizes family therapy in the treatment of alcoholic veterans, as well as the 1979 Veterans Health Care Amendments that authorize a pilot program to allow the VA to contract for community-based care, treatment, and rehabilitation for eligible alcoholic veterans. Other VA initiatives include increased consultation, liaison, and cross-service staff training to improve the visibility of alcohol-related medical and surgical cases and to provide technical support for needed treatment in other clinical areas. The VA spent an estimated $83.6 million on alcohol treatment services in fiscal year 1979 (U.S. Department of Health and Human Services 1980).

National Institute of Mental Health.

Alcohol admissions have accounted for an increasing percentage of total admissions to community mental health centers (CMHC) every year from 8.8 percent in fiscal year 1971 to 11.9 percent in fiscal year 1977 (most recent data available—Goldstein 1980). CMHCs with an alcohol component numbered 428 in fiscal year 1979. NIAAA contributed a total of $8.7 million to alcoholism treatment in CMHCs during fiscal year 1979 (National Drug and Alcohol Treatment Utilization Survey 1979).

The Report of the Liaison Task Panel on Alcohol-Related Problems of the President's Commission on Mental Health in 1978 urged that there be categorical coverage of alcoholism under any national health insurance plan that is developed. *The panel noted that "historically, where alcoholism as a diagnosis has not been specifically included in health insurance coverage. . .it has been effectively excluded."* And the panel went on to urge that such coverage include care provided to family members of identified alcoholic persons.

National Institute on Drug Abuse (NIDA).

A limited number of clients have received treatment for primary alcohol-related disorders at NIDA-funded clinics. The costs of these services were estimated to be $700,000 in fiscal year 1979 (U.S. Department of Health and Human Services 1980).

Indian Health Service (DHHS).

The Indian Health Service (IHS) has been the primary resource for alcoholism-related problems of American Indians and Alaskan Natives—a population estimated at 1.1 million. The IHS provides direct health services through 50 hospitals, 101 health centers, and several hundred health clinics. It also purchases services from private sources to supplement its direct delivery system.

Title II of the Indian Health Care Improvement Act (Public Law 94-437) required the IHS to assume responsibility from NIAAA for support of American Indian and Alaskan Native alcoholism programs that have been in existence for 6 years or longer. Thirty-six programs were transferred in fiscal year 1978, and 52 in fiscal year 1979. The expenditures for these 88 programs totaled approximately $8.7 million in fiscal year 1979. NIAAA will continue to fund new programs ($935,000 for 33 programs in fiscal year 1980) and the IHS will fund mature programs through its Office of Alcoholism Programs (U.S. Department of Health and Human Services 1980).

Rehabilitation Services Administration (DHHS).

Rehabilitation Services Administration (RSA) is responsible for vocational rehabilitation and other services to handicapped individuals to help them prepare for gainful employment. Alcoholic persons are defined as handicapped but not severely handicapped and thus comprise a small percentage of persons served by RSA. RSA alcohol activities are associated with the basic State program of formula grants and are arranged for through the vocational rehabilitation agencies of States. In fiscal year 1978 (the latest available data) rehabilitations involving alcoholics comprised 4.7 percent of the total conducted with RSA funds (U.S. Department of Health and Human Services 1980).

Migrant Health Program (DHHS).

Within nine of the migrant health projects, mental health staff are being funded to provide onsite triage, counseling, and followup to migrant workers. Approximately 17 percent of all mental health problems in this population are categorized as alcohol-related (U.S. Department of Health and Human Services 1980).

Appalachian Health Program (DHHS).

Two projects that relate directly to alcoholism (detoxification, driver education), and two projects that provided mental health services were funded in fiscal year 1979. It is believed, however, that all of this program's primary care projects also provide some treatment for alcohol abuse problems.

Bureau of Medical Services (DHHS).

Bureau of Medical Services (BMS) administers programs that provide direct health care to American seafarers, Coast Guard personnel, and commissioned officers of the Public Health Service and NASA. Eight general Public Health Service hospitals, 27 freestanding clinics, 154 Federal health units, and the National Hansen's Disease Center are operated by BMS. All of these have been placing increasing emphasis on alcohol abuse problems. Six of the eight hospitals offer formal alcohol

detoxification programs. In fiscal year 1979, there were 2,692 hospital discharges for alcohol or alcohol-related diagnoses at a cost of approximately $6.8 million (U.S. Department of Health and Human Services 1980).

The Law Enforcement Assistance Administration (Department of Justice).

The Law Enforcement Assistance Administration (LEAA) is not mandated to provide alcohol treatment as such, but does address programs to drug and alcohol abusers within the criminal justice system. These are the Treatment Alternatives To Street Crime, Treatment and Rehabilitation For Addicted Prisoners, and the Corrections Program Standards Implementation Program for Drug and Alcohol Identification and Treatment. LEAA expended approximately $2 million on these in fiscal year 1979 (U.S. Department of Health and Human Services 1980).

Bureau of Prisons (Department of Justice).

The Bureau of Prisons (BOP) supported alcohol treatment in seven Federal correctional institutions in fiscal year 1979. These activities are mandated under the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act. These voluntary programs employ a wide variety of treatment and intervention strategies to promote prosocial lifestyles. Data were available for only four projects in fiscal year 1979 with a $26,000 expenditure (U.S. Department of Health and Human Services 1980).

U.S. Coast Guard (Department of Transportation).

The U.S. Coast Guard maintains a substance abuse prevention program with coordinators at each Coast Guard command. Treatment is conducted at Public Health Service hospitals, or in cooperation with the Navy or Marine Corps. The Coast Guard estimated that it expended $371,000 on its program in fiscal year 1979 (U.S. Department of Health and Human Services 1980).

ACTION.

This agency administers and coordinates the volunteer programs of the Federal Government. Alcohol and drug abuse treatment are among the wide variety of community services that Volunteers in Service to America (VISTA) deliver to projects to which they are assigned. ACTION estimates that less than 20 percent of volunteers' time is spent on alcoholism counseling and referal representing an expenditure of $71,000 in fiscal year 1979 (U.S. Department of Health and Human Services 1980).

Military Services Program (Department of Defense).

In accordance with title V, Public Law 92-129, the Military Selective Act, the Department of Defense (DOD) provides a program designed to prevent and discourage alcohol abuse among members of the Armed Forces and to restore and rehabilitate service members who are alcoholics or have problems related to alcohol use. In fiscal year 1979 all of the military services combined spent approximately $47.2 million in this area, two-thirds of which was spent for treatment (U.S. Department of Health and Human Services 1980). Also in 1979, the first annual DOD Worldwide Drug/Alcohol Conference was held to facilitate program information exchange and promote understanding.

The Private Sector

The private sector, for purposes of this section on financial resources, is comprised of commercial insurance carriers, Blue Cross/Blue Shield (private nonprofit) plans, and independent plans (e.g., health maintenance organizations). While these are obviously differing entities, each does represent a financial resource in the private sector. It was estimated that at the end of 1977, approximately 80 percent of all civilian, noninstitutionalized Americans were protected to some degree by one or more forms of private health insurance. Seven hundred private companies and 70 Blue Cross/Blue Shield plans were in the business of providing health insurance. The Health Insurance Association of America estimated that $43 billion in health benefits were paid by private companies. This accounted for about 46 percent of all consumer health care expenditures (Hallan 1980).

The Health Care Financing Administration estimated total revenues (income from premiums) for private health plans for 1977 to be: $19.6 billion for Blue Cross/Blue Shield; $23 billion for commercial carriers; and $4.6 billion for independent plans (HMOs) (Hallan 1980). Even so, it is estimated that only 63 percent of the U.S. population has *some* form of mental health coverage for inpatient services, and only 38 percent has outpatient coverage (Hallan 1980). These percentages shrink further when coverage for alcoholism is examined. More recent and more precise national data are needed, but according to an NIAAA survey in 1976, 21–85 percent of all individuals served in NIAAA-connected treatment programs had some form of health insurance, but only 10–45 percent had coverage for alcoholism services (Cooper 1979).

Commercial Carriers.

Coverage for alcohol treatment services in the past has been either excluded from most private health insurance plans altogether, or included only under traditional psychiatric benefits—themselves being most often less than other health benefits. For a number of reasons—including the insurance purchaser's unwillingness to pay any additional costs to extend benefits; the lack of purchaser demand for the service benefit; and the insurance companies' reluctance to recommend coverage, fearing excessive additional costs would cause their contract to be less competitive—private insurers set a pattern of reimbursing for the physical health manifestations of alcoholism but not for treatment of the disease itself.

Spurred by the continued upward spiral of health care costs generally, by the growing understanding of alcoholism as a separate disease, and by a greater interest in health insurance within the Federal alcoholism sector, private insurance carriers have begun to expand their coverage.

In 1964 two private companies—Kemper and Wausau—took the lead in providing some limited specific benefits for alcoholism, and there has been increasing activity since then. In 1979, of the approximately $795.2 million in funds flowing into the 4,073 treatment facilities nationwide, private insurance carriers contributed $143.3 million, or 18 percent. These funds went to 702 facilities at an average amount of $204,000 per facility (National Drug and Alcoholism Treatment Utilization Survey 1979).

This increase in private carrier reimbursement, combined with their clear willingness to explore the possibilities for further involvement, highlight a significant change from 20 years ago. Companies are making an effort to systematically review cost and utilization data so that experience can guide further expansion of alcoholism benefits. With some joint public-private ventures on issues such as standards, quality assurance, and benefit definition and resultant premiums, progress should continue.

Blue Cross/Blue Shield.

Blue Cross/Blue Shield plans—of which there are approximately 70 nationwide—are separate, semi-autonomous health plans that are loosely organized into the national Blue Cross/Blue Shield Association. Individual plans vary somewhat in the breadth and nature of the alcoholism benefits they offer. Blue Cross Association estimates, however, that currently about 85 percent of all Blue Cross plans recognize alcoholism as a covered condition, and provide benefits for services at approximately the same levels of coverage (relevant to duration and dollar amounts) as benefits for other covered diagnoses. A 1977 Blue Cross/Blue Shield Association survey

showed that 54 of 61 respondent plans covered medical detoxification; 40 of 61 plans covered alcohol rehabilitation; and 8 covered both inpatient and outpatient care in both hospital and nonhospital facilities.

There have been a number of occurrences and projects involving Blue Cross/Blue Shield plans over the past several years that are significant for the financing of alcoholism services.

–In 1976, the Blue Cross/Blue Shield Association and NIAAA initiated a nationwide study to determine the feasibility of offering comprehensive benefits for alcoholism treatment throughout the Blue Cross health insurance system. The study has produced a series of technical assistance documents designed to address the essential components needed in comprehensive alcoholism coverage. The documents were distributed to Blue Cross/Blue Shield plans in a report in 1980.

–In 1974, the Blue Cross Association of Maryland offered a benefit package to its subscribers in the State. By 1980, 200,000 of the 1.6 million (12 percent) subscribers had enrolled. The utilization rate of those who did subscribe was $14 out of every 10,000, and the residential treatment costs averaged $75 per day compared with $220 per day in a hospital (National Coalition for Adequate Alcoholism Programs 1980).

–In January 1981, the Blue Cross/Blue Shield Service Benefit Plan that covers approximately 53 percent of the Federal work force was expanded to cover 28 days of alcoholism treatment in freestanding alcohol facilities and in hospital-based programs. A 20 percent coinsurance was included for the freestanding facility while none was imposed for hospital care (J.S.L. Reports 1980).

–NIAAA has been using data on costs and utilization of alcoholism services under the substance abuse benefit provided to the United Automobile Workers through Blue Cross and Blue Shield of Michigan. Approximately 9,200 patients were seen for alcoholism in 1977, representing 47 percent of all patients receiving drug abuse benefits. The average cost of a visit to a freestanding outpatient facility was $18.87 compared with $32.61 for an outpatient hospital visit. Average visits per patient to hospital outpatient services totalled 4, compared to 8.5 visits in freestanding facilities. The average payment per patient for a course of outpatient care was $160 compared with $1,644 for a course of inpatient hospital care that averaged 11 days (Blue Cross and Blue Shield of Michigan 1977).

–In Virginia, the General Assembly requested in 1977 that the State Department of Personnel and Training develop an employee alcoholism program. They did this with Blue Cross/Blue Shield's assistance and with an added premium of 14 cents per month for an individual subscriber and 36 cents for a family (National Institute on Alcohol Abuse and Alcoholism 1978*a*).

Health Maintenance Organizations (HMOs).

HMOs provide basic and supplemental health care on a prepaid basis to their membership. To qualify for Federal certification, an HMO must offer medical treatment and referral services for alcohol or other drug abuse. The Group Health Association of America, a national voluntary organization of prepaid group health plans, initiated an alcoholism treatment feasibility project to test the potential of comprehensive alcoholism treatment services in prepaid group practice plans. The project is funded by NIAAA and is being conducted at three sites—Kaiser Permanente Health Plan in Portland, Ore.; Metropolitan Health Plan, Detroit, Mich.; and the Arizona Health Plan, Phoenix, Ariz.

Data based on the first 3 years of the project are encouraging. More than 700 persons utilized the alcoholism HMO program in the first 18 months. There was a 31 percent reduction in utilization of total health services at 12 months after treatment, as compared with use 2 years before entering treatment, and significant decreases in utilization were noted in nonalcoholism services at 18 months. Clients at 18 months showed a 75 percent overall reduction in alcohol consumption, a 55 percent reduction in absenteeism, a 90 percent reduction in reprimands at work, and a 60 percent reduction in family member utilization of services following initiation of treatment of alcoholic family members (Group Health Association of America 1980).

Human Resources

Statistics from the 1979 National Drug and Alcoholism Treatment Utilization Survey (NDATUS) point to prevailing trends in manpower patterns in the alcoholism field, and indicate emerging needs.

As table 2 shows, degreed professionals in the full-time category amount to 40.6 percent, with 10.7 percent of those holding an Associate in Arts degree, and 8.7 percent being licensed practical and vocational nurses. The remaining degreed professionals are split in small percentages among psychiatrists, other physicians, psychologists, nurse practitioners and physicians' assistants, registered nurses, and social workers.

Nondegreed counselors add up to 18.4 percent, while vocational and recreational therapists number 2.8 percent, and student trainees 2.1 percent. Finally, additional administrative and support staff comprise 35.5 percent of the total of paid, full-time workers in the field.

The trend for the majority of alcoholism treatment unit workers to have obtained their training in areas other than degree courses is the result of the early development of manpower resources in alcoholism treatment. The evolution of the alcoholism work force has roughly paralleled the growth of the field's funding sources. Until the 1930s, alcohol-related problems were regarded as social ills to be dealt with by churches and other charitable organizations. The development of Alcoholics Anonymous (AA) in the late 1930s and early 1940s provided an important source of assistance to alcoholics. AA relied on the principles of self-help and volunteerism, and showed that peer-group interaction could help many alcoholics. The National Council on Alcoholism (NCA), also dating from the 1940s, used volunteers to bring the message of support for alcoholism services to the general public.

Some observers (Matheson in press) believe that the success of AA and NCA in reaching the public led directly to the government response that has now made the study and treatment of alcoholism a discipline in its own right. The influx of Federal, State, and local funds into the field over the past 10 years has created hierarchies of functions and workers that have extended the specialty's modest beginnings.

In the years before alcoholism was recognized as a major health problem, community volunteers generally provided needed services. Until recently, most aid for alcohol-related difficulties came from nonmedical, nondegreed volunteers, relying on self-help techniques and working through AA, The Salvation Army, churches, and other voluntary groups. Voluntary agencies, linked through NCA, constituted the only identifiable national network in the alcoholism field. Alcoholism treatment services developed and became institutionalized by local, State, and Federal agencies between the 1950s and the 1970s (Camp and Kurtz in press).

Alcoholics Anonymous had shown that untrained persons could often intervene successfully with alcoholics. Health care professionals had not shown much interest in alcoholism treatment because it offered few personal financial or professional rewards. Consequently, as new programs evolved, the most experienced group of workers who were interested in treating individuals with alcoholism were recovering alcoholics (Camp and Kurtz in press). Personnel shortages in the mental health field and the community mental health movement insured the emergence of alcoholism counselors as primary service providers.

The 1980s Work Force

The decade of the seventies, beginning with the creation of the National Institute on Alcohol Abuse and Alcoholism and the large-scale commitment of Federal funds to combat alcohol-related problems, produced changes in the alcoholism work force. Health care professionals began to enter the field in greater numbers. Issues concerning worker qualifications were raised with regard to the effectiveness of various types of professionals. With the organization of therapists into counselor associations, further issues have developed between alcoholism counselors and other types of professionals (Camp and Kurtz in press).

An examination of personnel issues in the alcoholism treatment field suggests the following:

–Alcoholism counselors provide most of the direct counseling services now given to persons with alcoholism and alcohol-related problems.

TABLE 2

Distribution of Full-Time and Part-Time Paid and Volunteer Staff by Staff Category for All Units Providing Alcoholism Treatment Only

	Full-Time Employees			
	Paid		Volunteer	
Staff Category	Number	Percent	Number	Percent
Psychiatrists	285	1.0	6	0.8
Other physicians	287	1.0	3	0.4
Psychologists-doctoral level	309	1.1	1	
Psychologists-master's level	425	1.5	5	
Nurse practitioner/physician's assistant	102	0.3	0	0.0
Registered nurses, M.S. and above	328	1.1	1	0.1
Other registered nurses	2,450	8.7	5	0.6
L.P. and vocational nurses	1,541	5.5	4	0.5
Social workers, M.S. and above	1,069	3.8	5	0.6
Social workers, bachelor's level	479	1.7	8	1.1
Other degreed counselors, B.A. and above	3,001	10.7	16	2.2
Degreed counselors, Associate Arts level	1,178	4.2	31	4.3
Nondegreed counselors	5,142	18.4	132	18.4
Vocational/recreational therapists	789	2.8	16	2.2
Other administrative/support staff	9,917	35.5	364	50.9
Student trainees	596	2.1	118	16.5
TOTAL	27,898	100.0	715	100.0

Part-Time Employees					
Paid			Volunteer		
Number	Full-Time Equivalent	Percent (FTE)	Number	Full-Time Equivalent	Percent (FTE)
724	156.1	4.7	72	14.2	1.5
871	200.0	6.0	111	14.7	1.6
375	103.6	3.1	33	4.9	0.5
234	72.6	2.2	49	4.0	0.4
59	20.9	0.6	15	1.5	0.1
92	30.3	0.9	11	1.9	0.2
1,034	439.0	13.3	30	4.4	0.4
420	184.3	5.5	9	2.4	0.2
411	139.1	4.2	54	9.4	1.0
124	51.6	1.5	18	5.0	0.5
637	249.8	7.5	220	39.5	4.3
179	66.0	2.0	175	30.5	3.3
679	294.7	8.9	1,481	221.0	24.0
389	131.4	3.9	265	44.0	4.7
2,306	989.1	29.9	2,085	352.6	38.4
557	169.7	5.1	781	167.6	18.2
9,091	3,298.2	100.0	5,409	917.6	100.0

SOURCE: National Drug and Alcoholism Treatment Utilization Survey (1979).
Note: This table is based on 2,821 units.

–Persons involved in treating alcoholics need specific *training*, *education*, and *experience* for their jobs. This requirement applies to every level of the work force, and should be enforced through competency-based evaluation systems.

–A cadre of alcoholism counselors has developed that has served a real apprenticeship in alcoholism treatment; its value should not be ignored or underestimated.

–Cost-effectiveness in alcoholism treatment demands that help be provided on whatever level it is needed—from informal conversation to structured analysis, and from peer advice to sophisticated medical treatment. This range precludes no class of alcoholism worker.

–Questions of confidentiality, maintaining professional relations, interpatient relationships, and truth in advertising are critical considerations for alcoholism programs and personnel.

–The traditional professional schools have begun to provide alcoholism-specific curriculums and clinical training to medical and nursing students, to seminarians in preparation for the ministry, priesthood, or rabbinate, to law and psychology majors, and to others logically destined to be primary service providers.

Curriculum Needs

Mental health professionals in the alcoholism field have had less specific preparation for their duties than have the alcoholism counselors with whom they frequently work. The traditional mental health professions have often overlooked preparation of their members for working with alcoholics and problem drinkers. The need in professional schools for adequate training and curriculums in the alcoholism field has been great.

Over the decade of the 1970s, however, considerable progress has been made in establishing alcohol and drug abuse curriculums in medical and osteopathic schools in the United States. While only 65 of the 120 schools of medicine in 1972 reported courses dealing with alcoholism, a study performed from 1975 through 1977 showed at least 102 of the current 117 schools of medicine offered some alcohol and drug abuse teaching (National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism 1980*a*). One emphasis in this direction continues to be the Career Teacher Program which was created by the Federal Government in 1971 to support medical school faculty members interested in teaching on alcohol and drugs. By 1979, this program was operating on 43 campuses across the country with more to come. As well, there are two national training centers created to provide onsite training in the form of course work and apprentice-type situations. National conferences of career-teacher grantees continue to promote the ideals of the program and develop a sense of community among these specialists in addictive illness (National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism 1980*b*).

The course of studies for persons involved in alcoholism treatment is not uniform. The required and elective course of study varies from school to school. An important area for further study is the examination of minimum course requirements for alcoholism treatment personnel so that standardization can be achieved.

Dartmouth Medical School, through funding by the Kroc Foundation, has initiated what could be the prototype of an alcoholism-specific curriculum. Project Cork will implement and evaluate an effort to integrate alcohol information into a medical curriculum. The new information will be blended into existing materials, rather than added on in an obvious supplement, and will be directed toward affecting the knowledge, attitudes, and self-report skills of students. Project leaders expect that upon graduation students will not only know about alcoholism but will be able to do something about it. Six other medical schools are joining Dartmouth in a consortium to conduct the curriculum experiment.

The Health Professions Education (HPE) Project was initiated by the Training Branch of the National Institute on Alcohol Abuse and Alcoholism (NIAAA), in cooperation with the National Institute on Drug Abuse (NIDA), to encourage health professions educators to incorporate comprehensive instruction on alcohol and drug abuse into the preclinical and clinical curriculums of physicians, nurses, physician assistants, nurse practitioners, and pharmacists. The HPE Project has established a data base of relevant curriculum resource materials for use by health professions educators. It is currently seeking to expand this data base in the following areas:

–Course syllabuses and lecture material, including unpublished scientific or technical papers;

–Curriculum objectives and designs;

–Self-instructional materials;

–Audiovisual materials, programed instruction, and other teaching aids.

In addition, the HPE Project is developing new curriculum resources for medical educators. For example, a series of curriculum guides for various medical specialties will be authored by medical educators. These guides will be available, without cost, for use in preparing alcohol and drug abuse instruction. Each guide will summarize the basic scientific and technical core of knowledge required of an instructor in order to effectively present substance abuse material as a part of his/her specialty. An annotated list of curriculum resource materials and a selected bibliography will be included with these guides.

Alcoholism Counselors and Credentialing

Alcoholism counselors are likely to have college degrees and, according to the Roy Littlejohn report (1974), to perform up to 22 tasks in their jobs. These include:

(1) intake; (2) assistance in developing treatment plans; (3) facilitation of transportation and other logistics of treatment as needed to maintain professional credibility with clients; (4) individual and group counseling; (5) continuous client evaluation; (6) referral; (7) crisis intervention; (8) casefinding; (9) client followup contact; (10) client orientation and motivation; (11) work with families and significant others; (12) seeking and using collateral support (employer, friends, etc.); (13) reporting and record keeping; (14) coordination of the treatment plan; (15) out-reach; (16) case consultation; (17) identification of treatment gaps and overlaps; (18) assist in program development; (19) identify, mobilize, and coordinate community resources; (20) education and prevention; (21) train other staff; (22) program consultation.

A more recent survey of national credentialing requirements for alcohol and drug abuse workers reveals that these tasks still comprise the functions of alcoholism counselors (Camp 1979). However, the extent to which a counselor performs the full range of tasks depends on the type of treatment setting and the composition of the staff (Camp and Kurtz in press).

Efforts to develop credentialing systems, particularly certification systems, for alcoholism counselors have been under way for several years. The recent commitment of funds by NIAAA to credentialing is evidence of the Federal commitment to the concept. The purpose of credentialing systems is to specify criteria that must be met in order to practice counseling. Other purposes of credentialing include enhancing the counselor's status, legitimizing counselor services as deserving of third-party payments, insuring quality of care, establishing the occupation as a profession, increasing the potential for job mobility, and supplying the profession with a means for accountability (Camp and Kurtz in press).

Up to the present, State certification systems have been developed either by interested State counselor associations or State agencies. An estimated 34 States are now certifying counselors (Camp and Kurtz in press).

The fact that States have independently developed criteria for credentialing could make reciprocity agreements difficult. However, because many States used the Littlejohn report as a guide for developing credentialing systems, there are likely to be many similarities among the systems that have been developed (Camp and Kurtz in press).

The eligibility requirements for credentials specified in the Littlejohn report included: a minimum of 1 year's experience as an alcohol counselor (some amount of training could be substituted for experience), a portfolio which includes evidence of experience and training, and satisfactory completion of a national certification examination. In addition, six areas of job competency were defined, including (1) communication; (2) knowledge of alcohol use, prevention of alcoholism, treatment, and rehabilitation; (3) evaluation and assessment; (4) planning; (5) information and referral; and (6) counseling and treatment (Camp and Kurtz in press).

Health Professionals in the Work Force

Although alcoholism counselors constitute the majority of professional workers now treating alcoholics, other professional groups are increasingly important and include physicians, psychologists, and social workers. The functions of these workers are determined in part by the objectives of the employing organization and in part by the match between the tasks to be accomplished and the available staffing in a given treatment setting. A major handicap in developing a comprehensive plan for an alcoholism manpower system is the lack of specific information regarding the functions performed by the various categories of workers. Since a comprehensive job analysis across institutional settings has not been undertaken, there is no way of determining the amount of variation in worker functions among institutional settings, nor the combinations or impact of different types of treatment teams. The ADAMHA task force report (Kole 1978*a,b*), while not complete, is helpful in clarifying functions by discipline (Camp and Kurtz in press).

The functions of these workers generally represent the role definitions they have in the medical hierarchy, but the extent to which traditional role definitions are observed is a function of the institutional norms. Physicians and psychologists could exert considerable influence in the alcoholism field. Ordinarily they occupy the role of program director, clinical director, or supervisory consultant. However, physicians often fulfill administrative roles and actual day-to-day operations are conducted by lower level staff. In many instances State licensing laws require that programs be under the direction of medical professionals and stipulate that only medical personnel perform certain treatment functions (Camp and Kurtz in press).

Psychiatrists are most frequently employed in alcoholism units at veterans and psychiatric hospitals. Frequently they assume major responsibility for the diagnostic process, the development of treatment plans, and the supervision of clinical staff. In contrast, physicians in other specialties are most likely to be employed in hospital programs where they direct the medical services rendered to the alcoholic. In comparison to the activities of physicians the work and employment pattern of psychologists is more diffuse. In addition to performing consultations around diagnostic issues and treatment planning, psychologists frequently assume a limited caseload, provide staff training, and engage in research (Kole and Mitnick 1978).

Within the alcoholism treatment setting MSW (Master of Social Work) social workers usually act as either case managers or therapists for the alcoholic client. In the former role, they coordinate clients' service needs from intake to followup. In the latter, they generally apply treatment techniques acquired in academic training. Social workers, however, are increasingly assuming administrative and supervisory responsibilities in alcoholism treatment. Currently, MSWs comprise the largest professional group among directors of community mental health centers (Kole and Mitnick 1978).

Social workers' roles are likely to vary according to the type of setting. Most frequently they are employed in community mental health centers, occupational alcoholism programs, and hospitals. In community mental health centers, a psychiatrist or psychologist is likely to be the clinical director, whereas the social worker functions as a clinical supervisor. In occupational alcoholism programs and hospital-based programs, the physician is the program director and the MSW the clinical supervisor. In contrast, in halfway houses and freestanding clinics, the social worker is frequently the program director and/or clinical supervisor, supported by a psychiatrist who serves as a clinical consultant (Camp and Kurtz in press).

In comparison with the administrative and supervisory role played by physicians, psychologists, and social workers, the role of nurses is generally one of direct service. Although nurses are most likely to work in hospitals, they are also represented on the staffs of halfway houses and freestanding clinics. In the latter facilities, nurses are likely to function as medical consultants to staff and clients, provide health education and supportive counseling, and perform routine nursing management tasks. Until recently their roles in hospital settings were more traditional, consisting of managing the medical regimen prescribed by the physician. Increasingly, however, nurses work as part of an interdisciplinary team in which they coordinate and implement the various services provided to alcoholic clients (Camp and Kurtz in press).

As alcoholism services become incorporated into general health services, nurses and other health professionals will probably assume an even larger role in the treatment process. Physicians' assistants and family nurse practitioners, for example, may become more involved with alcoholism treatment. Currently, these workers, like several other occupational groups such as occupational therapists and aftercare and outreach workers, represent only a small proportion of the alcohol work force (Camp and Kurtz in press).

The Relationship of Volunteers to the Work Force

The contributions of volunteers to the national alcoholism effort continues to be of major significance. Alcoholics Anonymous, while not formally allied with any sect, denomination, organization, or institution, provides important services for alcoholics. For alcoholics in a variety of institutional settings, volunteers from AA organize and conduct inhouse AA meetings, transport persons to hospitals and detoxification centers, take patients to outside AA meetings, and provide critically important linkages to the larger community. In many cases, the fellowship of Alcoholics Anonymous constitutes either the major or the only source of aftercare available to discharged patients seeking a program of continuing recovery. Alcoholics Anonymous also meets the needs of many alcoholics who have never entered the formal treatment system. Numerous recovered alcoholics with many years of continuous sobriety attribute their recovery to Alcoholics Anonymous alone.

While AA provides for the needs of many alcoholics, AL-Anon is an important resource for spouses, parents, older children, and other concerned persons whose lives are connected to alcoholics in significant ways. For many years, AL-Anon has recognized the family aspects of the disease and has provided its membership with information, peer learning situations, and emotional support systems of incalculable significance and value. Alateen provides similar services to the younger children of recovering families.

Recovery from alcoholism requires an enduring social support system, one that is available to the person on a daily basis, at any time of the day or night, and for many years. Formal treatment systems cannot be expected to provide these intense levels of continued care without enormous expenditures for manpower, services, and institutions. As a consequence, programs such as Alcoholics Anonymous, AL-Anon, and Alateen, as well as other volunteer efforts, will continue to perform vital roles in the national alcoholism effort.

Implications for the Development of Alcoholism Manpower

The composition of the work force has undergone considerable change over the past two decades. It has changed from one primarily comprised of nondegreed workers to one of both degreed and nondegreed personnel. During this period Federal policy was initially focused on the problem of providing a more adequate supply of skilled workers. Training was considered the most expedient way to increase the supply of counselors and to provide existing lay counselors with more formal education opportunities (Camp and Kurtz in press).

While the availability of training opportunities solved the immediate problem of supply, other problems developed. In the past decade the work force has diversified considerably (Pattison 1977), and, as a result, questions about who should do what for alcoholics have increased. Moreover, the impact of such forces as professionalization, credentialing, mainstreaming of services, and third-party payments have further complicated the development of an integrated work force (Camp and Kurtz in press).

Until recently there was no Federal policy or program for developing a comprehensive manpower system. NIAAA's State Manpower Development Program (SMDP) was developed in 1979 to coordinate provider skills with treatment needs. The task facing the SMDP is that of directing the present set of manpower activities into an integrated manpower system that can respond to alcoholism needs with reasonable efficiency and effectiveness (Camp and Kurtz in press).

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